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# THE **South African MINING JOURNAL**

WITH WHICH IS INCORPORATED

"The South African Mines, Commerce & Industries."

ESTABLISHED 1891.

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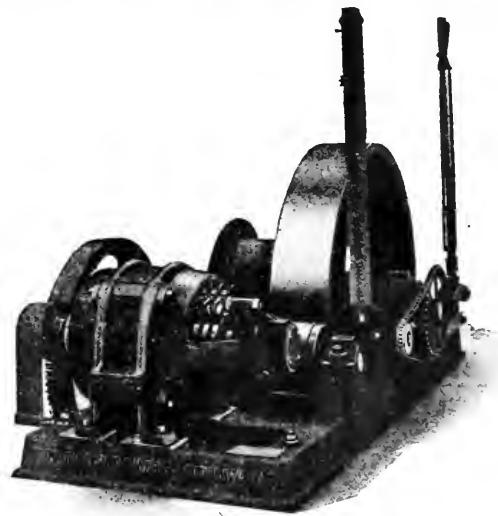
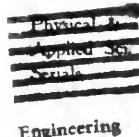
VOL. X, PART II., No. 498.]

JOHANNESBURG, TRANSVAAL, SATURDAY, SEPT. 21, 1912.

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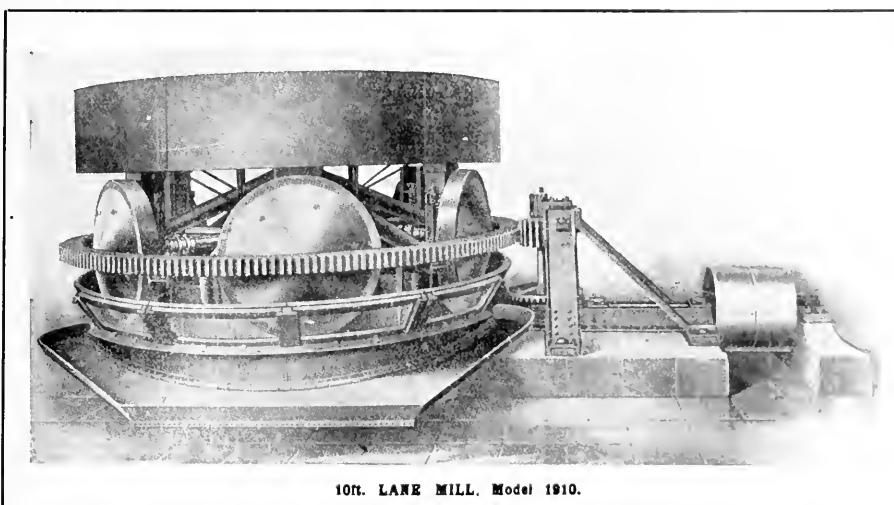
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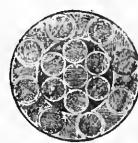
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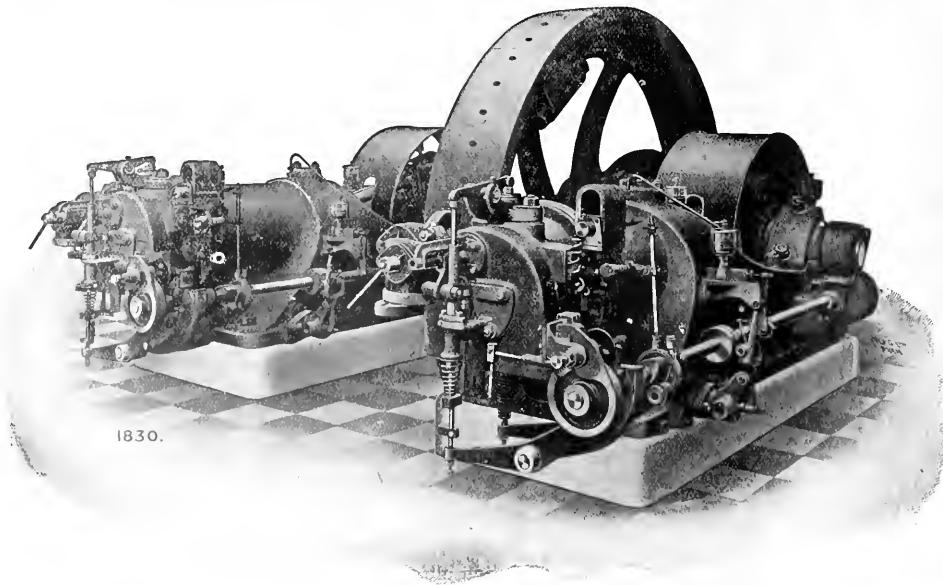
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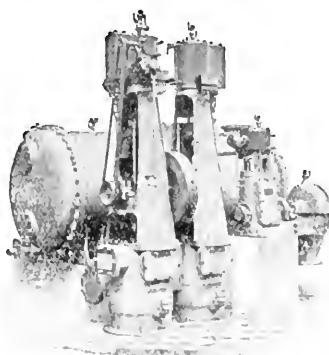
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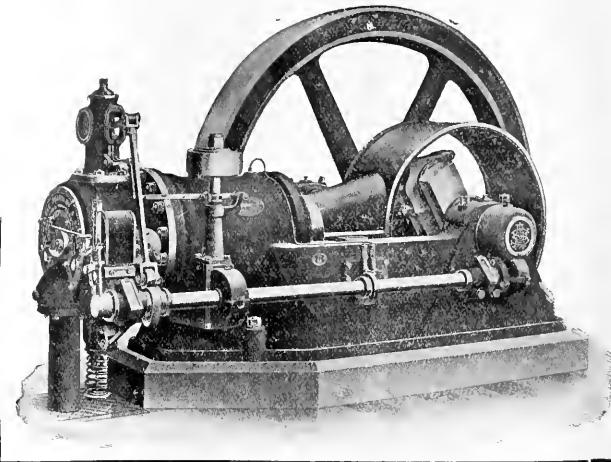
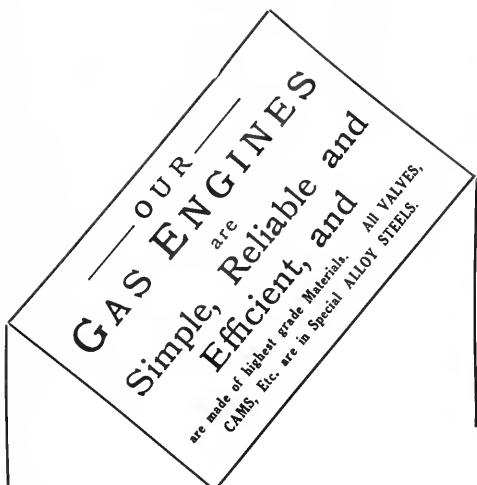
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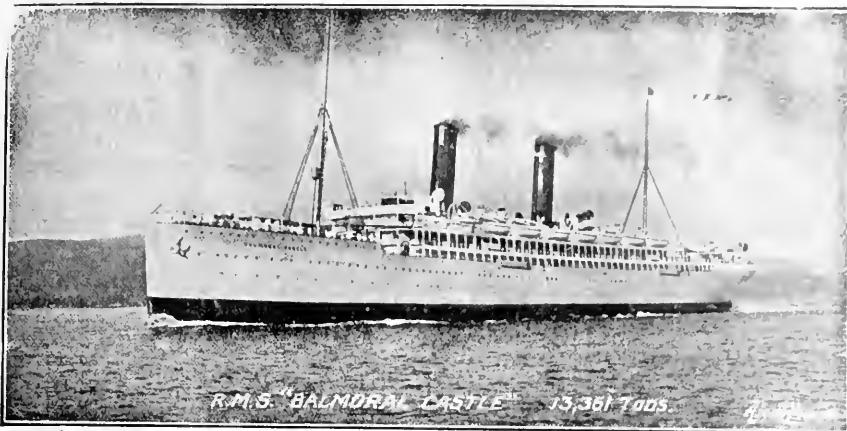
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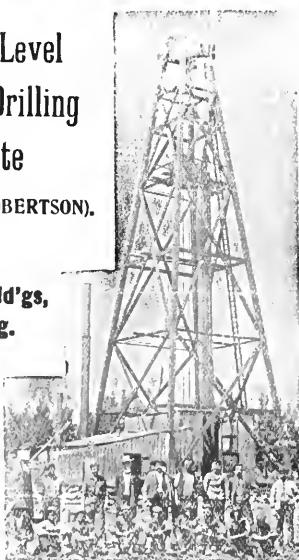
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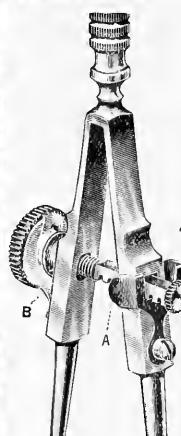
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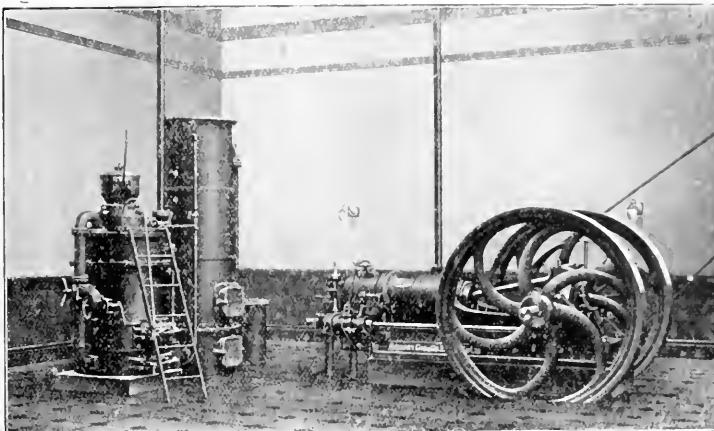
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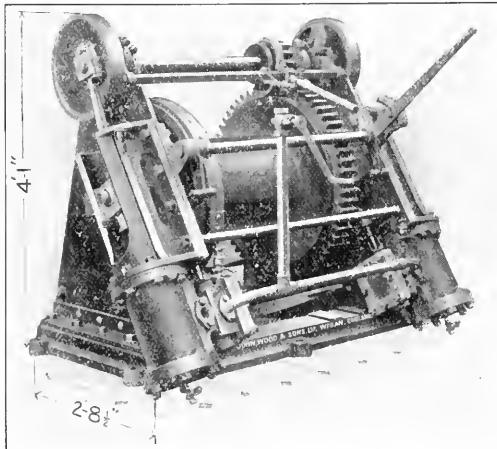
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# THE SOUTH AFRICAN Mining Journal,

WITH WHICH IS INCORPORATED

*South African Mines, Commerce and Industries.*

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## Notes and News.

We learn that Mr. G. H. Turner, formerly manager of Zaaiplaats, and latterly consulting engineer to the company, has resigned his position. For a long while past Mr. Turner has been far from well, and we trust that the relaxation which he will now be able to take will bring about a genuine improvement in his health. In connection with Zaaiplaats, it is interesting to observe that reliable authorities in the English metal market are predicting a considerable advance in the price of tin at an early date, not as a result of market manipulation, but by reason of those exigencies of demand to which we have more than once referred this year in the columns of the *S.A. Mining Journal*.

\* \* \* \* \*

Enquiries having been made at this office recently with regard to the position of the miners of the Great Eastern Collieries, Ltd., it may be stated as a matter of general interest that the company is now in process of liquidation. All the plant was sold by auction, and is said to have obtained a fairly satisfactory price, considering the wear and tear which it had gone through. The board expects, if matters are concluded as they hope, to have a balance of about fourpence per share for a final distribution. As some legal matters have still to be arranged, however, they are unable to make any definite statement upon this point at present.

\* \* \* \* \*

We understand that the Machavie mine in the Potchefstroom district, is about to restart work with a new enlarged equipment designed to obtain a satisfactory return from its somewhat refractory ore. It will be remembered that the mine was closed down though making good profits, owing to the advisability of installing a plant capable of winning the maximum profits obtainable. A financial scheme has been successfully completed whereby 25,000 new shares will be issued at 35s. each. Most of these have been taken up by the larger shareholders in the company, and Dr. Schlesinger has guaranteed the balance at 35s. free of underwriting commission, that is, at the full price. Thus financed, the property has every prospect of success. It will be recalled that the values won and shown by development were always high; and a report made recently by Mr. Sam Thomson for the directors is of a very encouraging nature. So much so, in fact, that his firm, Messrs. S. Neumann & Co., have acquired large interests on the dip of the Machavie, and purpose starting prospecting operations without delay. Next week we hope to give fuller details of the Machavie plant and prospects.

\* \* \* \* \*

It is reported that the Penwith Extension has purchased that block of claims in Appingedam, known as Brown's block, together with the ore which has been lying at grass for a long time past. In addition to this, there is said to have been purchased some 18 claims known as the Ross claims. The Brown claims are probably well known to those who have visited Appingedam, or the local lecturer referred to in reports of the Geological Survey.

\* \* \* \* \*

In his book of reminiscences, sold locally and elsewhere, all of which are gathered together under the title of "The South African," Mr. J. H. Curle, as might have been expected, has something to say on mining. He has stated: "As to the speculative side of things, the more I get to know, the less I understand. I find, naturally, that the market value of a mine does not bear relation to the intrinsic; that nearly all mines are overvalued, and that bargains are few and far between. Not that I disapprove of speculation; far from it, but one gets better value for money that is seen in the morning list. Beware the

mine that is puffed. Beware the type of director who takes the cream off early information. Mines are harmless things in themselves, but the men who control them are rarely harmless. How needful it is that the men who work them shall be above suspicion. Mining shares are bought, as a rule, on sentiment—on the swing of the pendulum. One day sentiment is good, and a hundred Rand shares go up. Sentiment continues good, and they go up further. After a time there is a burst of buying, almost a 'boom,' and yet there has been no change whatever in intrinsic values." "The public gambles in this way because it must. It is in the nature of things. They take immense risks, and rarely stand to win, but if they choose so to act, who is to interfere?" These are the matured conclusions of a long and unique experience in mining, but they are conclusions to which most men come who have had much less experience. And yet there are still people on the Rand who want to know "what is the matter with the mine?" when prices begin to fall about their ears. The other day, for example, a Government enquiry into the condition of the Zaaiplaat mine was suggested in the Press. It would have much more to the point to enquire into the real why and wherefore of the business connected with the strip. And so in most cases.

\* \* \* \* \*

The reconstruction scheme of the National Diamond Syndicate was carried to a successful conclusion

**National Diamonds.** last week, when the increased capital of £30,000 was duly registered. It would seem that the worst difficulties have now

been smoothed over, while the additional development of the mine is reported to be such as to justify the optimism of the directors. There are practically no difficulties in the way of actual mining to be overcome, and when big operations are started, costs, it is claimed, should be very low. Since the reconstruction was taken in hand, new machinery and plant have been added and the whole outfit is now compact and in good running order. From the 2,183 loads washed, 246 carats of diamonds were recovered, and these are of exceptionally fine quality. Of these 2,183 loads washed, it must, however, be understood that before the new plant was added many hundreds of loads of lumps passed away with the tailings without yielding up their valuable contents. Mr. John F. Bach, who acted as reconstructor of the syndicate, has been appointed chairman and managing director, and will adopt a vigorous policy. We understand that the diamonds won and examples of yellow and blue ground will shortly be exhibited.

\* \* \* \* \*

The acquisition by Sir Abe Bailey of a large interest in the Cam and Motor mines invites further attention to the outlook for these very interesting Gatooma properties. It is

**Cam and Motor Developments.** common knowledge that the Cam and Motor have opened up in a remarkably pleasing manner, but it is perhaps not generally realised that there are standing developed in these mines at the present day over a million tons of ore having an average value of about 15s. per ton. In other words there are developed in these adjacent blocks tonnages containing gold of a total value of over two and a quarter million pounds sterling, or probably about the same value as has been blocked out at the great low-grade Shanna mine, in the Abercorn district. The Cam and Motor reserves, however, are of much higher grade, and will yield a substantially larger profit. The tonnage to-day is double what it was in the middle of last year, and by the time crushing commences the Cam and Motor will be in an exceedingly strong position as regards ore in reserve, a position such as comparatively few gold mines have attained to before the beginning of milling operations. The estimates given above refer to ore down to the 5th level only. Special interest attaches to the developments on No. 5 level. A crosscut at 510ft. south on this level has shown for the first 20ft. of work done a value of nearly 50s. per ton, and on the whole the average of the 5th level is better in widths and values than the results obtained on the level above. The greater part of the work done on the property to date has been on the Motor lode, which has a north and south strike. The Cam occurrence, which has an east and west strike, and

appears to run into the Eileen Alannah claims, has so far practically been ignored. The Cam claims are, however, of great promise, and if there exists a parallel lode in this section of the property, as appears to have been indicated by latest developments, the value of the Cam section will be enhanced greatly.

\* \* \* \* \*

We have on previous occasions referred to the metallurgical scheme to be adopted at the Cam and Motor.

**The Metallurgical Programme.** It may be recalled that a testing plant was in operation for some months, and as a consequence of the experiments conducted

it was decided to crush the ore, then further reduce it by fine grinding, followed by roasting, fine grinding again and cyanidation. An extraction of about 85 per cent. is officially expected, and it is probable that a plant designed on the above lines and of 15,000 tons per month capacity will be ready for work in about eight months' time. This equipment will, we presume, be laid out with a view to extension at a later date. By the time production commences there will be something like a five years' supply of ore for the mill. Working expenses are expected to rule at about 2*s.*, including development, so that a profit in the neighbourhood of a sovereign per ton seems possible. The mine is clearly a very important potential producer and dividend-payer, and we shall be surprised if it does not occupy a high place in the list of the world's producing gold mines before many years have elapsed.

\* \* \* \* \*

Milling operations have not yet commenced at the Consolidated Langlaagte. The plant has been completed for some weeks, but sufficient electric power has not yet been available. A little power is now forthcoming, but only enough to operate some of the crusher units. However, it is expected that the company will commence work in its new plant on the 1st of October. The new equipment for the Van Ryn Deep, described elsewhere in this issue, will be a sister equipment of the Consolidated Langlaagte's installation.

\* \* \* \* \*

The third monthly general meeting of the S.A. Institution of Engineers will be held on Saturday, at 8 p.m., in the Council Chamber of the Chamber of Mines. Mr. S. E. Boult will read a paper entitled "Electric Hoists in Headgears." Discussion will be continued

on Dr. W. Glucksmann's paper entitled "The Execution of Plans and Drawings," and on Mr. W. Cullen's paper entitled "Trade Schools and Continuation Classes." Also discussion will be concluded on Messrs. F. Zur Nedden and H. B. Maxwell's paper entitled "The Commercial Economy of Turbine Pumps," and on Mr. R. B. Greer's paper entitled "The Margin of Safety Required for Man Haulage at Great Depths." Mr. Cullen's paper on "Trade Schools and Continuation Classes" has aroused considerable interest, and the discussion on it has been conducted on broad lines. Many prominent men in the local industrial world have been specially invited to attend the meeting, and they will in all probability deliver some valuable contributions to discussion. Visitors interested in the technical training of the white youth in the country will be cordially welcomed.

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Mr. E. Meintjes, of Pretoria, is said to have found a new diamond mine on the farm Kameelfontein. Interviewed by a Pretoria paper, Mr. Meintjes said:—"I cannot say at the moment whether we have a pipe or not, but there is every indication of a mine, and the wash is panning out well. I am forming a small private company with its head office in Pretoria. The generous support of Pretoria friends has enabled me to keep the business in the town; if it had not been forthcoming the company would have had to be located elsewhere. I am willing at any time that is convenient to give the public information of how the venture progresses."

## TOPICS OF THE WEEK.

### THE ANNUAL REPORT OF THE G.M.E.

In view of the wide area from which statistics have to be collected, the 1911 report of the Mines Department, issued this week, is not so belated after all. It deals with mining throughout the whole Union, and is full of interesting matter from which we hope to print extracts. Some of its globular figures may be quoted, if only to illustrate the growth and importance of South African mining. The total value of the mineral output last year was £47,679,291, as against £43,674,249 in 1910. In 1910 the total of mining employees was 302,145, made up of 31,808 whites, 4,157 Asiatics, and 263,180 natives. In 1911 the total of mining employees was 317,940, made up of 38,561 whites, 4,897 Asiatics, and 274,182 natives. The revenue from the Transvaal gold mines in 1911 totalled £1,125,560, as against £815,339 in the previous year. One or two other interesting figures may be quoted. The total increase in the mineral output of South Africa in 1911 over the previous year is £4,005,045. The gold output last year represents 36 per cent. of the world's production as against 33 per cent. in 1910. The total production of gold from the Union of South Africa since 1868 to the end of 1911 amounts approximately to £325,102,223, which was practically all produced in the Transvaal. Ten thousand three hundred and eighty-three stamps and 259 tube mills were at work during December, 1911, as compared with 9,800 and 197 respectively in December, 1910. The tonnage crushed per stamp per twenty-four hours last year averaged, on the Rand, 7,831 as against 7,335 in 1910, and 4,989 in 1904-5. The average value per ton of ore milled in the Transvaal last year was 28/078s, as against 28/71s. in the last six months of 1910. During the year £14,071,108 was expended by the mining industry on machinery and stores. The gold mining industry accounted for 82.2 per cent. of this; diamond industry for 10.3 per cent.; coal mining industry for 3.9 per cent., and the base metal industry for 2.6 per cent. Direct Oversea importations by mines amounted to £196,078, of which the Transvaal took £115,249, the Cape £298,171, Orange Free State £62,726, and Natal £19,932. The Cape mines were, therefore, in proportion to their total purchases, the worst offenders in this respect, and the Transvaal the least. Almost every aspect of mining activity is dealt with in the reports, either by the Secretary for Mines, Mr. Warington Smyth, or by Mr. Kotze. In addition, lengthy portions of the reports from the Inspectors of Mines in the different districts are included. Chief attention is devoted by the Secretary for Mines to the question of accidents in the mines of the Rand, and he makes a very sane and thoughtful contribution to the literature of the subject. We are glad to note that he shares Mr. Samuel Evans' impatience with those who make comparisons with other classes of mines, and he declares that such comparisons are "unprofitable and misleading." A high percentage of accidents, he urges, is attributable to a variety of causes, among these being the low mentality of the natives, and the fact that many miners are lacking in sound education and training. Referring at length to the need for more settled conditions among the miners themselves, Mr. Warington Smyth dwells on the desirability of more "long-service" men in the mines. He says, "the white miners represent the non-commissioned officers of the regiment, and without those long-service men as the backbone, the essential discipline of the regiment must be wanting. One of the first necessities, therefore, as regards the prevention of accidents, is probably the settlement of miners in attractive settlements in the neighbourhood of their mines, and a more settled spirit of work, not only among the working hands, but in the head offices, in the directorates and in the management." Instances will occur to the minds of everyone who has repeated changes in the managing staff of some mines have been made, followed by a complete turnover of the underground officials, and

subsequently, by changes in nearly the whole white staff." This, of course, adds to the Secretary's desire to have the matter where it has been possible for the Department or the Government to take any direction. It is a question of management by the companies of their own affairs. All that can be done in such a case is to make suggestions and leave it to the pressure of time and circumstances to bring about a change." The Secretary for Mines, however, gratefully acknowledges that there is at present a growing tendency on all hands to appreciate the necessity for better underground discipline, more moral and spiritual inspiration by mine chiefs, and for a greater sense of security and permanence of employment among white workers, and a tribute must be paid to the energy which many mining firms and mine managers are throwing into the measures necessary to achieve this result. In connection with the mine inspectorate, Mr. Warington Smyth indulges in a dig at Mr. Merriman. He writes: "As regards the inspector staff of the Department, it must not be forgotten that whatever the present opinion may be as regards its adequacy in point of numbers, there have been many omissions during the past ten years when the inspectors of mines still had to be protected from the pruning-saws of those search of outlets for their zeal for economy, and during periods of retrenchment the present strength has been maintained not without difficulty." Space forbids us to do more attention this week to what is undoubtedly a most valuable report, but other extracts from it appear elsewhere in this issue, and we shall return to several questions raised in it. The troublesome business of getting the other Provinces into line has apparently been successfully accomplished by the Department, and Mr. Warington Smyth, Mr. R. N. Kotze and the various Inspectors of Mines and Machinery, are to be congratulated on a most thorough and exhaustive report.

### THE NATIVE LABOUR POSITION.

As usual, the native labour position occupied most of the remarks of the President of the Chamber of Mines at the monthly meeting on Thursday. The report, which is printed elsewhere in this issue, shows that while at the end of July the total number of natives employed by the masters of the Witwatersrand Native Labour Association amounted to 207,256, the figure had fallen by the end of August to 203,841—a reduction of 3,415 natives. These were at the end of August an extraordinarily large number of natives in the Witwatersrand Native Labour Association compound, viz., 2,600, awaiting distribution. These have since been sent to the mines. Mr. Elkan stated on Thursday that natives for food-souping forward were freely this year during the winter months than has been the experience in the past, and a particularly pleasing feature is the considerable number of old song boys who return to work. Furthermore the number of what is termed voluntary natives is ever increasing. The reduction of the production of 3,415 natives, however, disappears in the wastage figure for the month, which was 1,000, leaving a net increase of the Witwatersrand Native Labour Association having recruited during August 21,881 natives as against 16,211 in July, the aforementioned 2,600 being taken in the wastage figure for the month being 20,982, as against 17,931 for the corresponding month in 1911. Presumably the large exodus of natives took place during the cold spell of weather experienced at the latter part of August and September as sending the natives back to their homes, but the natives are coming forward in increasing numbers, according to the terms of the stipulations of the agreement in certain parts of South Africa, and it is to be hoped that the coming out review will be favourable, and that the local effect of freezing the native labour supply will be removed. Government, said Mr. Elkan, through their official channels would assist all employers of labour by impressing on the native the necessity of finding a home, and that

voluntary recruiting stations at the Cape established six months ago by the Witwatersrand Native Labour Association are to be stopped. The system of advances to natives in that Province has not been attended with success, as a real danger exists of natives accepting advances from several recruiters, and accepting the punishment of mere imprisonment with equanimity. From tropical areas this season the mines have received so far 4,147 boys, a large percentage of which are old mine boys. In view of the very high mortality which obtained some time ago among this class of labour, the greatest care is being taken that only strong and healthy boys are sent to the mines, and that the efforts to reduce the mortality rate are proving successful is proved by the fact that the death rate for the past month shows a reduction of 10.95 per 1,000 per annum as against the month of July. An increasing supply, coupled with a decreasing death rate, may, therefore, be said to sum up the favourable labour prospects of the moment as officially confirmed by the President of the Chamber of Mines on Thursday.

### UNION CURRENCY QUESTIONS.

In the course of an article dealing with banking statistics, which recently appeared in the *S.A. Mining Journal*, mention was made of the fact, incidentally, that about 50 per cent. of the present note-circulation of the Union consisted of the Cape legal tender issue, which is specially regulated by the Bank Act of 1891. It was further stated that the belief was general in certain quarters that the coming legislative proposals of the Union Government would result in the removal of the existing restrictions on the Cape issue, and that such an action would probably contribute to a larger circulation throughout the Union. It may be asked, why should the Government trouble about such a matter? Obviously, there are divergent regulations regarding issues in the various Provinces, and it should be the duty of the Government to bring these into harmony as soon as possible. The question may not be dealt with for a year or two longer, but when it does come forward for consideration, it should arouse considerable interest and discussion. The Government, in fact, should provide for the creation of an elastic issue, which is perfectly safe from the note-holders' point of view, without in any way imposing on the persons authorised to issue. It is to the interest of the Government to have as large a circulation as possible, for the tax levied is usually based on the average circulation. A plentiful issue is certainly a boon to the public, for notes are more useful in many forms of transactions than gold; and in a young country such as South Africa bank notes prove a very essential form of currency, for cheques have not yet come into vogue to the same proportionate extent as in England.

Under normal conditions, the circulation of the Union averages £2,200,000, of which the Cape notes (legal tender in the Cape and Rhodesia) are responsible for £1,200,000. Generally speaking, during recent years, the Cape circulation has slightly exceeded the combined issues of the Transvaal, Natal and Orange Free State; and this fact would rather suggest that the criticisms directed against the Cape system have been unwarranted. But the matter must be looked at more closely; it should be remembered that the banks, as issuers of notes, have it in their power to enlarge a circulation by merely reminding the public constantly of the existence of such notes. If an issue is so restricted as to permit of no profit to the issuers, it is hardly to be expected that the latter will take steps to popularise the notes. The Cape notes emanate from the Treasury, and bankers wishing to avail of the privilege of issue must invest a sum in Government securities, the par value of which must be equal to the value of the notes taken out. The notes are subject to a Government tax of 1 per cent. per annum; and are, of course, convertible into coin on demand. In the event of any issuer being unable to redeem a note on demand, the holder may appeal to the Treasurer, who is then

empowered to sell a portion of the securities and apply proceeds towards redemption of the note. Taking the average circulation of these notes at say £1,200,000, and the amount of cash reserves held for purposes of redemption as 25 per cent., it will be found that bankers have a sum of £900,000 available for lending. Let it be assumed that the banks get, on an average, 6½ per cent. for accommodation, the sum in question will yield them an annual revenue of £58,500. On the other hand, the Government tax swallows £12,000, while a further loss results to the banks from the fact of having to keep so large a sum locked in securities which only yield 3½ per cent. on the average. Estimating this loss at £36,000, namely, 3 per cent. on £1,200,000 (the rate representing the difference between the yield on the securities and the average rate obtained for loans, etc.), there is a gross annual revenue to the banker of £10,500, from which must be deducted the cost of administration, together with depreciation expenses. It is difficult to form an estimate respecting the last two items, but it is well known that large sums were applied towards depreciation by the banks during the recent depression. Opinion in the Cape has been somewhat divided respecting the merits and demerits of this issue; some have openly contended that the system is unprofitable to the issuers, while others again hold that it just permits of a small margin of profit. It is a fact, however, that for years only three banks have issued notes in the Cape, and that the circulation has been limited to the amount of money these have been disposed to place in Government securities. During the period of depression, bankers had ample funds to place in such a form of investment; in June, 1908, for instance, a circulation of £839,000 was covered by securities value £2,500,000. Now, on the contrary, the circulation is relatively large, and bankers' funds scarce; a circulation of £1,170,000 is in fact being covered by securities value £1,608,000. The Cape system is a relic of conditions long since gone by; the Bank Act of 1891 was a sequel to the crisis of 1890, which carried away several institutions, including the Cape of Good Hope Bank. The question will have to be seriously considered, therefore, whether the stringent regulations which public opinion demanded after a serious crisis will satisfy the conditions of the Union to-day. None of the attempts to regulate issues in Provinces outside the Cape can be characterised as scientific, so that it remains for the Government to make the Cape system legal throughout the Union or introduce a new system altogether. Imagine the normal requirements of the Union in a few years' time as, say £4,000,000, what would be the effect of the application of the Cape system to the Union? Apart from the relative hardships on the issuers, the public would suffer, for the banks would have to increase very considerably their holding of Government securities, which fact might divert funds from other sources. How serious a factor this might prove in times like the present, when there is a general dearth of capital, can well be imagined. On the other hand, if the Government decides to do away with the Cape system, the banks now holding Government securities would probably seek to lessen their holdings, and apply their funds to more profitable forms of investment, as soon as they are free to do so. Unless the Government is itself in a position to redeem these securities, there might be difficulty in getting buyers, in which event prices would be seriously affected.

It has been suggested that the Government should take advantage of the present opportunity to introduce an issue of its own. The Australian Government, despite trenchant criticisms from high financial authorities from all parts of the world, has recently adopted an issue of this nature; and the banks which had formerly, successfully, issued and regulated notes are now prohibited from what they consider to be their legitimate function. Financial history teems with instances where Governments come to grief in adopting such a course. Theoretically, the principle is unsound, for in times of stress a Government will easily be tempted to issue notes in excess of the community's requirements—that is, fail to maintain the convertibility of the notes. The results are a depreciated currency and high prices of commodities. Under such circumstances the credit of the Government will be impaired.

## THE LIVES OF WITWATERSRAND MINES.

### Approximate Figures for Thirty-three Properties—Problems with Varying Factors—Estimates Official and Unofficial.

ESTIMATES as to the lives of Witwatersrand mines are proverbially dangerous calculations to frame. At the best, nothing more than an approximation can be arrived at, and it has happened time after time that the most carefully worked out estimates have proved in practice a great deal wide of the actual mark. Generally, the lives of Main Reef mines have exceeded the duration of the period of profitable production estimated at some earlier date in the histories of the properties concerned. Numerous instances of estimates having fallen short of the actual lives by two or three years, or even more, might be cited. Perhaps the case of the Bonanza was one of the most remarkable. Just after the war it was assumed that this rich semi-deep level little property had only a year or two more to run, yet it continued to declare dividends and produce gold up to the end of 1907.

#### "UNKNOWN QUANTITIES."

In other properties, as in the case of the Bonanza, it has been found possible substantially to prolong the period of productivity and profit-earning by "sweeping" stopes and by reworking old stopes in which leaders were passed over in early operations. Improvements in metallurgical practice and the reduction of working costs have admitted of ore which a decade ago was considered unpayable being worked at a profit, and all these things have combined to extend the lives of properties. The policy of amalgamating mines and absorbing properties approaching the end of their tethers has obscured the "life" factor in the cases of a number of mines. These absorbed properties have been merged in the larger affairs of the purchasing companies, and hence it has been impossible definitely to compare the lives of such mines with estimates. But in practically every instance Main Reef properties have outlived their allotted spans, and it is probable that they will continue to do so. If in the case of a small mine like the Bonanza estimates erred so greatly, it may well be asked, "Is not the error in the case of a large 1,000 claim venture likely to be so large that the estimate can scarcely pretend to be even an approximation?" This view, in so far as a number of mines are concerned, is a correct one to take. The Crown Mines or the Middelfontein B or the Middelfontein Government Areas, for examples, possess such vast mining areas that probably no estimates which can pretend to accuracy within ten years are practicable. One can only accept the presumed tonnage per claim (calculated from work so far carried out), multiply this by the number of claims believed to remain intact, and divide by the present rate of exhaustion. In each instance a quotient of a third of a century or more is arrived at. Before that period draws to a close a number of things will happen. Operating costs will probably decline, and metallurgical extraction improve, resulting in the profitable working of ore which is to-day deemed unpayable. Who knows what revolutionary methods may not be introduced into mining and metallurgical practice within the next half decade? And admitting the possibility of great changes being effected within the next five years, who shall say but that two dwt. ore will not be worked at a profit thirty years hence? Variations in the dip of the reef and in its width and value, of course, affect the life factor. So do fluctuations in the labour supply. To what extent milling and treatment equipments will be extended is a further problematical factor which naturally has an equally important bearing on the life estimate. Taking all these unknown quantities into consideration, it will be abundantly clear that whilst only a mere approximation is possible in regard to the lives

of mines which are approaching exhaustion, it is even a proximate estimate with any degree of confidence advanced for mines which have the large proportion of their claim areas still intact.

#### THE NEUMANN GROUP PROBLEMS.

We have deemed this problem essential to take up in giving any figures on Rand mine lives, as it is most important that it should be fully appreciated that the estimates given in this article are not expected to be actually borne out in practice. But the figures are of considerable interest and value, and some of them will probably be found to err to a small degree only. In one or two instances the official figures of companies have recently stated what the probable lives of certain mines are estimated to be. These figures have been arrived at after most careful calculation and examination of all attendant problems by the consulting engineer and mine manager and their respective staffs, so that a fair degree of accuracy is possible. It may be recalled that Mr. W. H. Dawe afforded shareholders such information as was available with regard to the probable lives of the Wollongong and Wit Deep at the last annual meetings of these two mines. Provided shareholders fully understand that the period during which profitable working can be carried on in a given area is subject to many varying conditions, the precedent of the Neumann group of companies is a good one. The Union Government insists upon life calculations as a basis for taxation purposes, these calculations being susceptible of periodical adjustment, and as the question of life is of such vital importance to investors, we think shareholders might well be given at least some data on which to base their own conclusions. Such estimates, like the calculations required by the Treasury, should be subject to modification in due course, and the modified calculations stated in the annual reports.

#### AN INTERESTING TABLE.

In deference to the wishes of a number of shareholders, and in reply to a host of queries received, we venture to append a table stating the estimated lives of the majority of mines operating on the Rand to-day. In some instances the figures are official; in other cases the calculations have been arrived at from such data as are available, and are believed to be as approximately correct as possible. The list is as follows, the lives being based on the present average rate of ore depletion, unless otherwise stated:—

	Years
<i>Central Mining and Investment Group.</i>	
Bantjes Consolidated	44
City Deep (55,000 tons per month)	37
Crown Mines	42
Durban Roodeport Deep	18
Ferreira Deep	12-15
Geldenhuys Deep	16
Middelfontein B	68
New Middelfontein (1,000,000 tons per month)	22
Nourse Mines	25
Robinson	6
Rose Deep	12
Villiers Deep	23
<i>Consolidated Gold Fields of South Africa.</i>	
Knights Deep	15
Robinson Deep	14
Simmer and Jack	12
East Rand Proprietary Mines	30

	Years.		Years.
<i>General Mining and Finance Corporation—</i>			
Aurora West .....	25	New Kleinfontein .....	25
Cinderella Cons. (1,200,000 tons per annum) .....	42	<i>S. Neuman and Company—</i>	
Meyer and Charlton .....	18	Consolidated Main Reef .....	50
New Goch .....	17	Main Reef West .....	45
Var. Flym .....	20	Wit. Deep .....	13
<i>Johannesburg Consolidated Investment Company—</i>		Wolhuter .....	10
Consolidated Langlaagte .....	30	<i>A. Goerz and Company—</i>	
Ginsberg .....	5	May Consolidated .....	1-2
Glencannan .....	9	Langlaagte Estate .....	26
New Primrose .....	6		
New Unified .....	9		

## IMPROVING RETURNS OF ROODEPOORT MINES.

### Positions of Productive Properties—A Brief Survey of the District.

A RATHER marked decline in profit-earning has characterised the statistics relating to gold production in the Roodepoort district during the past year or two, but it would appear from the July returns that a corner which has been admittedly depressing and anxious has at last been turned, and that still better results may be anticipated in the near, if not in the immediate, future.

#### THE OLDEST MINE OF THE DISTRICT.

The Durban Roodepoort, the oldest mine in the locality and the most prolific producer and dividend payer, is approaching the end of its remarkably remunerative life, and although the management is to be congratulated on the very substantial reductions effected in working costs, it is not to be expected that this fine old property can to-day earn such large profits as were announced six or seven years ago. In 1905 the Durban Roodepoort made £112,700, whereas the rate of earning disclosed by the July returns was only at the rate of £50,000 per annum. But in the former period the mine was obtaining a revenue of 38s. 8d. per ton, whereas the yield in July last was only 21s. 7d. It may be recalled that in his report for 1908 the general manager wrote that under the changed conditions the life of the mine may be placed at "nine to ten years," and that reduction in costs per ton "has brought into the region of payability the greater proportion of the Main Reef tonnage in the mine, and has made the Main Reef a highly payable proposition instead of wavering on the profit boundary." Working expenses to-day are at the rate of only 15s. 6d. per ton, as compared with over a guinea in the 1905 period, but the mine obviously cannot be expected to return to its old state of prosperity, although the Durban Roodepoort will continue to pay profits for some years.

#### THE OTHER PRODUCERS.

As to the three other producing Roodepoort mines—Durban Roodepoort Deep, Princess Estate, and Roodepoort United Main Reef a comparison of aggregate tonnages crushed and profits earned shows that whereas, in the first six months of 1911, 395,960 tons were milled for a profit of £97,675, the earnings for the first half of this year from 421,753 tons were £67,688. Clearly there has been a marked contraction of grade, and the tiding over of the transition stage at the Princess and the Roodepoort United further affected returns. It is, however, gratifying to note a large improvement over the returns for the first six months of this year in the July statistics. The profit earned was £12,257, or, say, at the rate of £117,000 per annum. The better position obtaining is made the more

clear by examining the profits of each of these properties (a) during the first six months of 1912 and (b) during July. The contrast is as under:—

	Average per month.		
	(a)	(b)	
Durban Roodepoort Deep .....	£6,239	£6,997	
Princess Estate .....	641	1,133	
Roodepoort United Main Reef .....	4,400	4,127	

It will be observed that the Durban Deep's earning is substantially better, that of the Princess Estate shows a large advance, and the Roodepoort United a small decline. The latter mine is now milling ore of a value less than one sovereign per ton, but by reducing costs to 16s. 9d. a profit of 2s. 5d. was recorded. Better results are anticipated when development in the old Kimberley section of the property is further advanced. Many difficulties have had to be faced at the Princess, and the work of reorganisation has taken longer than was expected. Whilst the mine has very clearly not yet got into its stride, a small improvement over the previous month's profit showing is to be observed. There is, of course, plenty of scope for further improvement. The rate of earning disclosed in the July report is low—1s. 2d. per ton—and although working expenses will always be relatively high at this property, there are reasons for believing that they can be reduced below the level which they now rule at.

Having completed payments on capital account, the outlook for improved distributions by the Durban Deep is, as was stated by Mr. E. A. Wallers at the last meeting, a particularly good one. The management is paying particular attention to the concentration of work underground. The 12th level is to be a main haulage level, and will be driven right across the property, a policy adopted by the Modderfontein B., City Deep, Village Deep, and other mines under Corner House control.

#### THE OUTLOOK FOR THE WHOLE FIELD.

Taking everything into consideration, the outlook for mines in the Roodepoort area appears much brighter to-day than it has been for some time past, and the prospect of larger profits is a good one. Admittedly results have recently been disappointing. The abnormal conditions prevailing at the Princess Estate and the Roodepoort United Main Reef have mainly been responsible for this. Moreover, the Roodepoort mining district contains thin gold carriers, and the formation is much broken in a large number of claims. Whilst these natural disadvantages cannot be eliminated, the work of reorganisation that has been such a prominent feature in the recent programmes of Roodepoort mines should result in these disadvantages being more effectively faced than hitherto.

## THE VAN RYN DEEP'S EQUIPMENT.

**Description and Diagram of the New Plant—Eighty Stamps, Eight Tubes and a 20-ton Duty—Butters' Filter Plant to be Installed—To be Ready next June—Progress of Construction—The Ore Reserve and Financial Positions—A Promising Outlook.**

*(For plan see following page.)*

In a recent issue we promised particulars of the new Van Ryn Deep equipment, and, as the initial details of construction work are now in an advanced stage, we are enabled here to give a brief description of the installation that it has been decided to erect. The diagram accompanying this article gives one a good idea of the general "lay-out" of the plant, as it will appear when completed. Readers of this journal will observe a close resemblance to the installation just recently completed at another property under the control of the Johannesburg Consolidated Investment Company—the Consolidated Langlaagte—of which we published a full account a month or two ago.

### WHERE THE LANGLAAGTE AND VAN RYN DEEP PLANTS WILL DIFFER.

As at the Consolidated Langlaagte, all the new and tried improvements evolved on the Rand and elsewhere during the past few years will be taken full advantage of, and both from an engineering and a metallurgical point of view the Van Ryn Deep plant promises to be as efficient and model an installation as brains and money can construct. In a word the Van Ryn Deep equipment will be "the last word" in the metallurgy of the auriferous conglomerates, and since no further "brand" new reduction and treatment plants are under design or construction on the Rand at the present time, it is likely to remain the most modern model of what a Main Reef mill and cyanide works should be until other great propositions in the Further East Rand area attain to the productive stage. As at the Consolidated Langlaagte, the battery will consist of a relatively small number of stamp units, but will be of high capacity. The ratio of tube mills to stamps will be the same as at the Langlaagte plant (that is one to ten), and these two Barnato mines will share between them the distinction of possessing a larger complement of tubes to stamp heads than any other mine on the Rand. In the general design of the machinery, in the sorting and crushing arrangements and the lay-out of the tube mills, classifiers and tanks, etc., the Van Ryn Deep plant will be almost a facsimile of the Consolidated Langlaagte's surface works. There will, however, be one or two essential points of difference between the two, notably in the slimes section of the cyanide plant. At the Consolidated Langlaagte certain portions of the old equipment have been included in the new, and amongst these is the decantation slimes plant. The Van Ryn Deep will be a new equipment from headgear to residues dump, and a Butters' filter plant has been ordered. The high efficiency of the Butters' installation needs no further appreciation from us in these pages. We have previously dealt at length with the excellent results secured by its use on other Rand mines, and it is destined to constitute one of the prominent features in the treatment plant of the mine under discussion. In regard to transport of ore from headgears to mill bins, the Van Ryn Deep plant will differ from that at the Consolidated Langlaagte. On account of existing plant, electric traction was decided on for the latter property, whereas at the Van Ryn Deep larger units will be transported, steam locomotives and 10-ton hopper trucks, such as are in use at Randfontein and the Main Reef West, having been ordered.

### THE BATTERY AND TUBE MILLS.

The Van Ryn Deep's battery will consist of 80 heavy Californian stamps, each of 1,900 lbs. falling weight. These will be supplemented by eight tube mills, each 16ft. 6in. by 6ft. in dimension. The capacity of the plant will be about 40,000 tons per month, which, on a basis of 25 full milling

days per month, gives the high duty of 20 tons per stamp per day. There will be room for a further 10 stamps, thus bringing the capacity up to 90 heads or a quantity between 500,000 and 600,000 tons per annum. As the property is a very large one, further extensions may be undertaken in the near future, but it will be realised from the foregoing that the mine will be crushing a large tonnage right from the start of productive operations.

### THE CYANIDE PLANT.

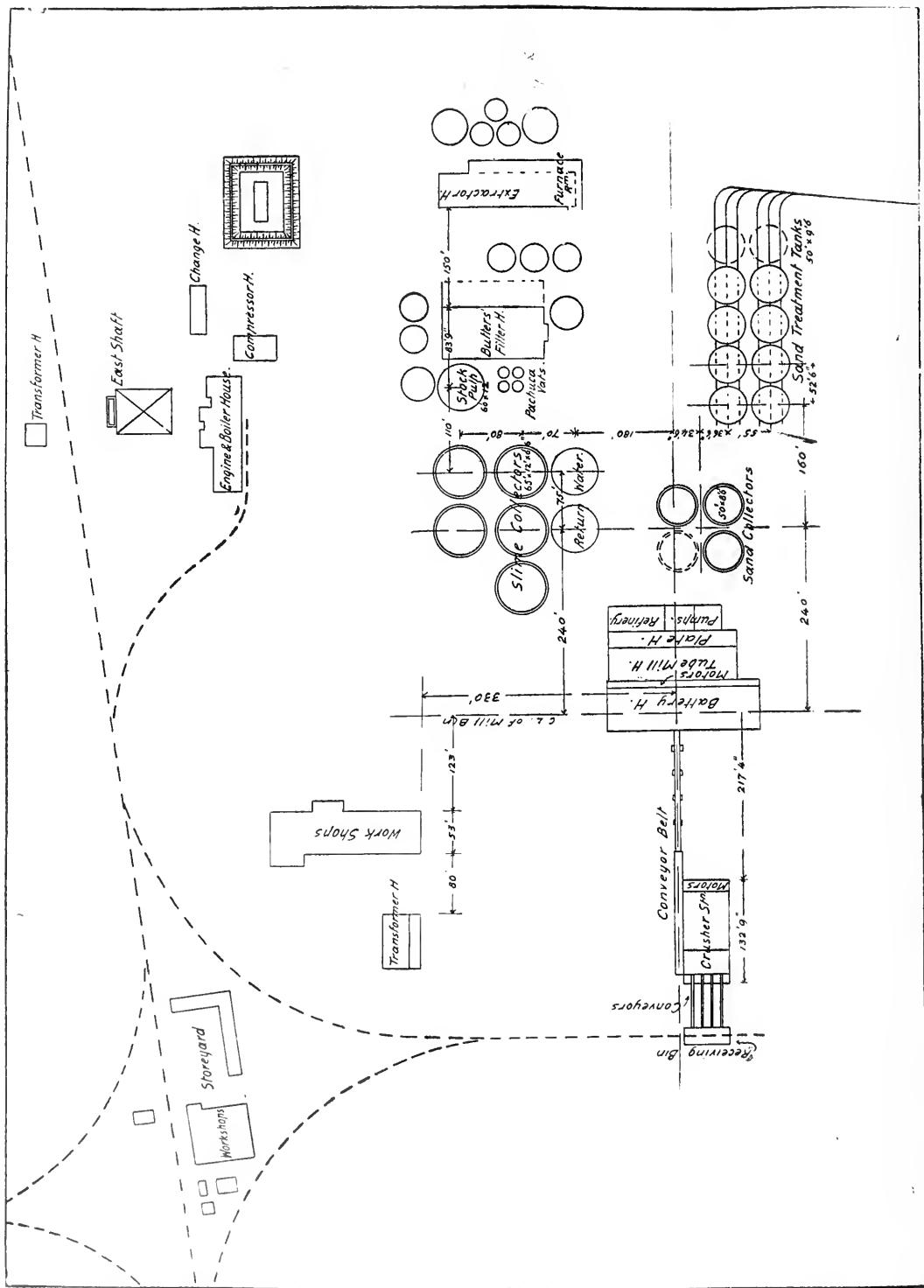
As at Langlaagte, the mill will be operated by electric power purchased from the Victor Falls Company, and, in accordance with the latest views on Rand milling practice, there will be no plates in the battery house. Apart from the Butters' filter plant, there is nothing very novel (in the light of the Consolidated Langlaagte and other new equipments) in the classification and cyanide plants. The sands plant will include three collecting tanks, from which the sand will be conveyed by a Blasdell distributor to eight treatment tanks. Disposal of residues has been well provided for. A haulage plant will be run underground the Main Reef Road and dumped on the south side of the thoroughfare. There is here a very large deposit site, and as the prevailing wind is in a north-easterly direction, this arrangement will materially assist in keeping the reduction and treatment plants free from the trouble some dust. At one time the location of the whole equipment to the north of the Main Reef Road was considered, but, as this would have involved bridging over or tunnelling under this thoroughfare in order to transport ore from the shafts to the mill bins, it was finally decided on to construct the equipment on the north side.

### THE DATE OF MILLING.

Speaking at the annual meeting held about three months ago, Mr. J. Munro anticipated that the equipment would be ready about 12 months from that date. The engineering staff of the Johannesburg Consolidated Investment Company have made a very good start in construction work. Orders have been well and expeditiously placed. The transverse road house has been completed and the works offices nearly finished. Excavations for the battery, tube mill house and sands plant are completed, and the first block for the mortar boxes has just been put in. So well is work advancing that, unless anything unforeseen occurs, the plant should be quite ready for work next June.

### DEVELOPMENT AND FINANCES.

A few words may be said more briefly regarding the underground and financial positions of the property. During the quarter ended with June last the east incline was sunk 149 feet to a total depth of 2,619 feet, at the 4th level. Work was started at an incline depth of 2,410 feet. The incline connecting the incline with the vertical shaft was sunk. The west incline was sunk 335 feet to a depth of 2,002 feet. The total footage driven, risen and sunk, exclusive of shaft sinking, amounted to 1,198 feet. The footings for the pump that accomplished during the previous quarter, owing to an inflow of water on the 5th level, cost £1,000, the cost of which necessitated the temporary stopping of stamping. Pumps have been installed to deal with the water, and no further trouble is anticipated. The cost of the stamps will be increased by 110,422 payable in the first instance, averaging £1,404.18 dwts. At the end of the year the unpaid balance on reserves stood at £90,815 million, or £1,000,000 less £7,50 dwts., and there were also developed £17,498 tons of payable ore of a value of 3,06 dwts. The development in the



PLAN OF NEW REDUCTION PLANT AT THE VAN RYN DEEP.

eastern section of the mine at the 4th, 5th and 6th levels was gratifying in value, although the amount accomplished was not so great as it would have been under normal conditions. In the central section of the mine values also were satisfactory. There were some encouraging features in the western drives, although this section of the mine is very irregular in value and not so promising as the other two. Towards the end of 1911 the cash resources of the company became virtually exhausted, and the board approached the largest shareholders with a view of putting the affairs of the concern on a satisfactory financial basis. An offer was received from them, declaring themselves ready to provide the necessary working capital to fully develop the mine and to equip the same with an up-to-date plant. This offer necessitated the reconstruction of the company by reducing the capital from £1,496,111 to £598,446, and the provision

of £598,446 was arranged to meet the proposed £1,196,000. This proposal was accepted, and the period got in during which the new plant was to be put into purpose, coincided with the receipt of the latest offer. With £600,000 less of £7,000, or about £593,000, the concern is now in possession of a highly modern and efficient development and treatment plant of its own creation. In a period of twelve months' time, the methods for the extraction of iron ore have been good ones. Moreover, the earliest profits, technical and developmental, obtained by the company since its formation in the neighbourhood during the past year, far more than amply justify the optimistic remarks sounded by Mr. Dryburgh at the annual meeting, when it was anticipated that the Van Ryn Deep would measure up to its productive capacity as successfully as its neighbour—the Bradgate Mines.

## SOME MINE ACCOUNTANCY PROBLEMS.

### Wiping Out Capital Expenditure at Rooiberg—The Common Procedure of Rand Companies—Recommendations of the Institution of Mining and Metallurgy.

SOME adverse criticism has been aroused amongst shareholders of the Rooiberg Minerals and Development Company, Ltd., on account of the fact that the directors have departed from the usage of the Rand in these matters, and have used some £20,465 3s. 9d. of the amount to the credit of the appropriation account for the purpose of writing off the items of development and exploration, and shafts, which appeared in the 1911 balance sheet as assets. In addition to this, the Board have included the whole of the expenditure for the year, under these headings, in the profit and loss account. The total sum involved amounts to £11,014 1s. 8d., of which the sum of £20,549 0s. 11d. is that incurred on shaft sinking, development, and exploration during the past year. The two dividends of 7½ per cent. each for the same period, amounting to £27,000, are considered by some of the shareholders to have been considerably smaller than they probably would have been if this wholesale wiping out programme had not been carried into effect, and, in any case, it is asserted, there was no justification for relieving posterity to this extent at the expense of shareholders who have borne the burden and heat and disappointments of the past. The continuation of the policy of charging development and exploratory work of all kinds against current profits is regarded by some as an aggravation of the grievance. The brief explanation afforded in the directors' report is that "It is not considered desirable to carry any of these accounts as assets on the balance sheet." The whole question opens up a wide field of controversy as to the proper method of dealing with expenditure which has been incurred in opening up and developing a mine. It has been proposed as justification that the method of wiping out these items in the way described is merely the following of a custom which has become famous under the name of the "cost-book system," a process which originated in Cornish mining, and was followed until recent years throughout the Duchy. According to this custom, expenditure was met periodically, as it was incurred, by calls upon the shareholders; profits were divided up to the best, and if, at any time, the metal market ran against the mine to any serious extent, the venture was closed down. The lamentable decay into which Cornish mining fell towards the end of the last century has been attributed largely to this same "cost-book system." It is, however, to be remarked that the principle of regarding such works as shafts and other so-called permanent works in the light of imperishable assets is unquestionably wrong, and the same may be said of any other

kind of mining property. Their cost has sooner or later to be met out of profits, in the same way that current expenditure on capital account has to be met, and, as was observed by Mr. Hugh Marnott in regard to the latter, when the question of working costs was discussed at a meeting of the Institution of Mining and Metallurgy a few years ago, the earlier this is done the more simple and straightforward will the accounts be. The point which is susceptible to argument is whether capital expenditure incurred under the heads of opening up and development should be charged in a lump against the profits of any particular period. Unless there are weighty reasons for adopting a course of this kind, it would appear that shareholders should be justified in protesting against this procedure. That there are weighty reasons to support the action of the Rooiberg board of directors we will not presume to deny. All that can be said is that they have not been specified.

#### MR. JOHN A. DENNISON'S PAPER.

An interesting review of the whole matter was made by Mr. John A. Dennison in the course of a paper read by him before the Institution of Mining and Metallurgy in November, 1908. So much of what he said applies to this particular case of wiping out that his remarks may well be quoted at some length. "The first cause," he observed, "after the plant starts producing, when all the working capital is exhausted, how to deal with the further expenditure on similar items which goes on in the course of carrying the life of the mine on, whether to charge it to the capital account or to working costs?" Dealing with the question of initial expenditure, he says: "The first stage may be divided into four headings, of which the following are the chief:—at the moment of the start. A initial expenditure converted and utilised shafts, shafts necessary for the start, i.e., in the development of the mine, and the first development. In the first instance, the initial expenditure on development, i.e., sufficient to cover the cost of producing stage, is not worth making, unless it is reduced at all, it being decided to let the mine stand at this or another level by means of a stoppage, and to add it to working costs. In the second instance, the initial expenditure on development is sufficient to cover the cost of capital suspension, and is so small that the cost of development in the first instance, which is incurred during the first two or three years of the mine's life. In either case, it is necessary to fix the rate of interest which the previous cost is to bear, and the rate of interest after which the new reserves are to be reckoned, which is added to the original cost, and the new development goes to working costs." It is difficult to see that there is no suggestion of a price for it in the article. Further on he

continues with current capital expenditure:—" (2) Subsequent capital expenditure, *i.e.*, there are many methods employed, and each mine management has its own ideas as to what constitutes capital expenditure, . . . . Some mines on the Rand have at times closed their capital accounts altogether, all further expenditure being charged to working costs; but most of them have at later dates reopened the capital accounts, for various reasons. The chief trouble is in regard to inclined shaft sinking, cutting stations, driving, winzing, raising, cross-cutting, box-holing, etc. In one large group of mines all such expenditure is called 'development,' and is charged to working costs monthly, care being taken to spend, as far as possible, an equal sum every month sufficient to keep the ore reserves up to a fixed standard (two-three years ahead of the plant), and generally to increase the total tonnage gradually. This system deserves consideration, as it is the simplest, and gives the shareholder the clearest idea of the position. Another favourite system on the Rand is to consider all current sinking of inclined shafts, cutting stations, and sometimes main cross-cuts, as capital expenditure, and not as 'development.' In such cases only the cost of driving, winzing, raising, and box-holing are considered to be 'development,' and these are debited to a separate capital account, which is practically a suspense account. At stated intervals the total sum standing at the debit of this account, say, £150,000, is divided by the total tonnage of milling ore estimated to be developed (after allowing for sorting out waste), say, 1,000,000 tons, and the resulting figure of, say, 3s., is charged to the next month's working costs per ton milled. In many cases this figure is altered monthly, according to the rough estimates of tonnage 'developed' by driving only; *i.e.*, each foot of driving is calculated to develop a certain tonnage according to length of 'backs,' etc. For many reasons," says Mr. Dennison, "it does not appear safe to calculate redemption on a mathematical basis, and the rate adopted should be that on the tons of payable ore, with a considerable margin for safety, thus gradually extinguishing the capital account." As regards shaft-sinking and main cross-cuts, he suggests that, after milling commences, they should be included under the heading of development, and dealt with in the same way.

#### VIEWS OF THE COUNCIL OF THE I.M.M..

In the report of the Mine Accounts and Cost Sheets Committee of the Institution of Mining and Metallurgy, which was unanimously adopted at meeting of the Council on December 21st, 1910, it was recommended, *inter alia*, that "after the producing stage is reached, all the expenses of development, including deepening main shafts, sinking incline shafts, cutting stations, drives, cross-cuts (including main cross-cuts), winzes, rises, etc., should be charged: (a) Direct to the working costs; or (b) to the development redemption account. In the latter case, working costs should be regularly debited with a rate of development redemption per ton milled, slightly in excess of the average cost at which the total fully developed and payable ore reserves stand in the books—the object being to extinguish gradually the temporary account, and thereafter to charge all current development and shaft sinking to working costs, or to provide funds for securing a gradual and automatic increase in the ore reserves. The quantity of ore developed cannot, it is true, be well ascertained at short intervals, but it can be determined annually more or less closely, and a fair rate can then be fixed as the price per ton under (b)." The suggestion (a) is open to the objection that excess development would be liable to entail an unfair burden on the current profits, and obviously the better method is that detailed at length in (b).

#### GOLD MINES AND BASE METAL MINES.

In considering the question under discussion, a circumstance that must be borne in mind is the great difference that exists between the product of a base metal mine and that of a gold mine from the point of view of saleability. In the one case we have a metal which, as far as can be foreseen, is not likely to depreciate in value to any important extent, while in the other there is a product which is subject to extremes of fluctuation in price, in accordance with the relative position of supply and demand. Schemes of development redemption which might be perfectly sound in the book-keeping of a gold mine might be altogether risky in that of a base metal venture.

## PROPOSED NATAL NATIVE LABOUR ASSOCIATION.

### Confined to Coast Industrialists—Natives to Choose their Employers.

THE report of a Special Committee appointed on July 17 to consider this matter is as follows:—

1. The Special Committee are of opinion that the proposed association for recruiting and distributing native labourers should be, in the first instance, confined to coast industrialists, but that the desirability should be kept in view of ultimately combining with coal-owners, farmers and other inland employers of labour.

2. They recommend that the Natal Sugar Association should make a grant of £20 to pay an agent to canvas mill-owners and the larger employers of labour, and induce them to become members of a Labour Employers' Association at an initial fee as follows:—For mills: Six mills of "A" class, £50 each; five mills of "B" class, £35 each; 19 mills of "C" class, £20 each; for planters, from £15 to £1; these fees to be for those who join the association and pay the fee before a given date, the fee to be increased by 50 per cent. after that date. These fees would form a fund for meeting the preliminary expenses of the association.

3. The working expenses would be met from indent fees, which it is recommended should be for the first contract of six months £2 per head, for the first renewal £1 10s., and for each subsequent renewal £1.

4. Depôts would have to be established at convenient centres, as experience dictated. The committee think that

no dépôt should be established in the Borough of Durban. They think that operations should be commenced with one dépôt and one agent north of Durban, and one dépôt and one agent south of Durban. The minimum cost of a dépôt the Committee estimate at £206.

5. Draft suggested rules for the conduct of the proposed association are appended hereto, founded upon the memorandum of Mr. Kirkman.

Mr. Pearce, Chairman of the Committee, supplemented the report by the recommendation that natives recruited should be allowed to choose their employers.

Mr. Acutt, in the course of his remarks, referred to the compound system as so bad that he wondered the natives stood it. He considered they should tap new sources of labour, and thought natives from the Transkei would come to Natal in preference to the Rand, even at lower wages.

Mr. Armstrong was of opinion the proposals were impracticable, as no planters could agree on a rate of wage, or, if agreed, would carry out the agreement. At the coal mines they were giving natives entertainments twice a week to attract them. He said they did not want labour on the sugar estates; natives were filtering down to the coast from the higher and colder plateaus.

After some further discussion, it seemed to be agreed that the time was not yet ripe to proceed with this proposal.

## THE YEAR WITH THE NEW MODDER.

## **Substantial Increase in Profits and Very Satisfactory Improvement in Ore Reserves.**

THE working expenditure and revenue account of the New Modderfontein shows that a net profit was earned during the year of £478,862 2s. 4d.; this sum, and the balance of £9,132 15s. 4d., brought forward from the previous year, has been dealt with as follows: Annuity in respect of mining rights, £17,310; purchase of 19 claims, £171 17s. 9d.; Government tax on profits, £43,152 14s.; dividends Nos. 11 and 12, each of £2½ per cent., £350,000; total, £410,931 11s. 9d.; balance unappropriated, carried forward, £57,060 5s. 11d. The following is a comparison of the leading figures for recent years:

July 1st to June 30th	Gold Declared.		Working Revenue.			Working Expenditure.			Working Profit.			Net Profit		Dividends Paid.	
	Ore Milled.	Fine Ozs.	Total Value of Gold Declared.	Average Value per ton of Ore Milled.		Total Working Expenses.	Aver. Cost per ton of Ore Milled.		Profit per ton of Ore Milled.		Total	Rate	Amount.		
1908-09	352,816	139,713,043	588,140 16	13 6 33 4		348,662 14	2 19 9		230,477 19	4 13 7	243,910 10	2 15	180,000		
1909-10	523,950	165,537,118	695,410 16	5 26 6		415,545 13	7 15 10		1,279,865 2 10	10 10 10	286,280 9 10	124	165,000		
1910-11	538,400	185,069,836	791,623 11	5 23 5		465,548 18	0 17 4		326,074 13 5	5 12 1	348,851 3 2	214	297,500		
1911-12	555,900	240,981,971	1,011,020 7	9 34 6		546,960 14	8 18 8		464,059 13 1	15 10	478,862 2 4	25	350,000		
Totals and Averages since 1896	3,129,480	1,170,111,547	4,915,642 16	0 31 5		3,161,369 6	2 20 3		1,754,273 9 10 11 2		1,854,379 14 4		1,247,500		

**CONSULTING ENGINEER'S REPORT.**

MR. B. MADEW, Consulting Engineer, writes: The main features of the operations of your company for the year ended 30th June, 1912, as compared with the previous year, are as follows: Tons milled, 30th June, 1911, 538,400 tons; 30th June, 1912, 585,901 tons; cost per ton milled, 30th June, 1911, 17s. 4d.; 30th June, 1912, 18s. 8d.; yield per ton milled, 30th June, 1911, 29s. 5d.; 30th June, 1912, 34s. 6d.; profit declared, including profit from accumulations, 30th June, 1911, £328,545, 30th June, 1912, £168,788; net payable ore reserves, 30th June, 1911, 3,341,830 tons (at 76 dwt/s); 30th June, 1912, 3,306,010 tons (at 81.4 dwt/s). The profit for the year under review includes the value of the gold reserve fund, which was done away with last March, and which at the beginning of the financial year stood at £35,225. The above comparison shows, besides a substantial increase in the profits, a very satisfactory improvement in the ore reserve position. The greater tonnage milled is due to increased capacity of the reduction plant, which was brought up to 52,500 tons per month towards the end of the previous financial year. The mine suffered severely from shortage of native labour during the last few months, resulting in reduced tonnage milled and increased working costs, but it is satisfactory to report that the set back in tonnage was more than compensated by the increased yield from the mine, giving improved profits for the latter half of the year. The payable ore reserves, as at 30th June, 1912, are as follows:—Main Reef: Block ore, 3,575,000 tons, value 8.1 dwt/s; shaft pillars, 157,000 tons, value 7 dwt/s; total, 3,914,000 tons, value 8.1 dwt/s. South Reef: Block ore, 113,000 tons, value 5.8 dwt/s; shaft pillars, 10,000 tons, value 6.7 dwt/s; total, 123,000 tons, value 5.9 dwt/s. Total: Block ore, 3,900,000 tons, value 8.1 dwt/s; shaft pillars, 167,000 tons, value 7 dwt/s; total, 4,067,000 tons, value 8 dwt/s. The stoping widths on which the above are based are 30 inches for the Main Reef and 38 inches for the South Reef. All the block ore is immediately available for stoping. As compared with last year the tonnage of available ore has increased by 558,000 tons, and the value by half a pennyweight, owing largely to the continuance of the satisfactory values of the ore exposed by the development operations in the eastern section. In addition to the above ore reserves there are developed 723,000 tons made up of blocks averaging from 3.0 to 4.3 dwt/s, the greater portion of which it is reasonable to expect will be profitably mined under more economical working conditions. The circular shaft was deepened a further 1,167 feet, to a total depth of 1,590 feet. The prospects for the ensuing year are distinctly encouraging, for although the native labour position is not as satisfactory as could be wished, by concentrating operations over a more limited area there is no doubt that better results will be obtained from the force at disposal. The factor, coupled with the strong ore reserve position and its steady improvement in value for some time past, indicates that substantially increased profits can confidently be expected.

## MANAGER'S REPORT

The Manager writes:—Mine.—The underground operations comprised the following:—Stoping, etc.—Stoping was carried on throughout the mine, resulting in a total of 600,860 tons, to which must be added the ore obtained from developing faces, making a total of

657,806 tons mined. The mine was opened to the Main Room. The stoping width averaged 17' 6" to 16' 0" at the West. The development operations resulted in the following shafts: Drives 7, 80 feet; winzes and 11' 6" 7,457 feet; 12 shafts, 1,483 feet; incline shafts, 535 feet; head frame chutes, 1,224 feet; No. 1 vertical shaft, 197 feet; main shaft, 1,167 feet; No. 21 shaft, 1,167 feet; No. 10 shaft incline was deepened a further 3 feet, making 12' 8" total depth from the surface 3,188 feet, or 614 feet below the 12th level. No. 12 shaft incline was deepened a further 532 feet, making 12' 8" total depth from the surface 2,889 feet, or 660 feet below the 8th level. No. 2 vertical was deepened a further 197 feet making 12' 8" total depth from the surface 1,673 feet, or 197 feet below the 8th level. The 12th level was deepened a further 1,167 feet, making 12' 8" total depth from the surface 1,476 feet, or 197 feet below the 8th level.

to below the horizon of the 8th level mechanical haulage, but the necessary shaft bottom equipment for winding from this level is not quite complete. At the collar of this shaft the erection of a new electric winder is making satisfactory progress and will be completed in a few months. No. 10 shaft has been connected with the above haulage level, this work necessitating the stripping of 720 feet of winzes from 5 feet to 10 feet wide between the 2nd and 8th levels east from No. 2 shaft. At No. 12 shaft, in order to expedite sinking operations, an electric hoist was erected on the 7th level, and sinking was resumed in the last few months. On the surface at this shaft, a new electric winder has been installed and is giving every satisfaction.

The circular shaft was sunk a further 1,167 feet to a total depth of 1,592 feet from the surface. In accordance with the development policy, this shaft will be connected on the Main Reef with No. 12 incline shaft. The footage remaining to be sunk at the end of the year was 3,000 feet in No. 12 incline and 700 in the circular shaft, and in order to lose no time in making the connection, rising from the bottom of the circular shaft will be commenced when the reef is intersected. The capacity of the plant remains at 52,500 tons per month. During the period several improvements were effected in the reduction works, among others being the conversion of the Butters Filter Process from the dry to the more economical wet discharge.

## THE EXHAUSTED AND DEFUNCT MINES OF THE RAND.

### Records of Mines that have Passed from the Productive List.

It is of interest to examine the records of mines which have either been entirely exhausted or have been absorbed by other companies when approaching exhaustion. We take the following instructive figures from the last annual report of the Government Mining Engineer. Complete records are not available to enable an accurate compilation, but the

tables following will enable the salient facts of the companies named to be grasped. Special attention should be paid to the footnotes. The Government Mining Engineer states that these particulars regarding exhausted and defunct mines, as compiled from various sources of information, should be looked upon as only approximately correct:—

COMPANY.	REEF BEARING AREA IN CLAIMS.	TONS MILLED.		GOLD RECOVERED.		DIVIDENDS DECLARED.			Costs, (Gold Recov- ered less Dividends.)
		Total.	Per Claim.	Total.	Per Claim.	Total.	Per Claim.	Per Ton Milled.	
Bonanza	.. ..	11,02	772,908	70,137	2,839,367	257,656	1,398,333*	126,890	34 28
Champ d'Or†	.. ..	27,50	981,664	35,697	1,963,760	71,409	219,196	7,971	4 47
Ferreira‡	.. ..	59,19	3,567,422		9,655,263		3,919,250		21 97
Geldenhuys Main Reef	.. ..	8 07	303,804	39,029	503,158	62,349	45,000	5,576	2 93
Jubilee	.. ..	9 72	906,636	102,535	1,626,333	167,318	495,479††	50,975	9 94
Pioneer§	.. ..	4 36	246,600	56,560	880,997	202,064	142,575	101,508	35 89
Salisbury	.. ..	17 67	1,064,845	60,263	1,701,420	6,289	248,823‡	14,082	4 67
Stanhope	.. ..	6 61	265,664	40,191	518,033	87,374	118,120	17,870	8 89
Worcester¶	.. ..	7 93	385,507		879,315		338,037		17 54
Ferreira and Worcester**	.. ..	59 19	3,952,929	66,784	10,564,578	178,486	4,257,287	71,926	21 54

\* Including £3,333 distributed after liquidation of assets.

† These figures are the results obtained up to the closing down in December, 1911. The property was sold in September, 1911, for £35,000, and is now being worked as the Ferguson Champ d'Or G. M. Co.

‡ and \*\* These figures are the results obtained up to 31st December, 1911. The company is still working, and is about to be amalgamated with the Ferreira Deep.

§ These figures are the results obtained up to 31st March, 1903, when it was sold to the Crown Reef for £20,500 cash.

This property has since November, 1903, been worked under the names of the Barham, the Cotteswold, and the Celine, and was closed down in January, 1912. These figures are the results up to this latter date.

¶ These figures are the results obtained up to October, 1903, when it was sold to the Ferreira G.M. Co., for £90,000 cash.

\*\* The Worcester paid £34,162 in June, 1903, for 33,000 shares in Claremont Mines, Rhodesia.

‡ The Salisbury in 1909 invested £30,000 in Claremont Mines, Rhodesia.

### Nourse Mines.

The reef disclosures at the Nourse Mines during the quarter were as follows:

Feet. Inches. Value.

Main Reef	.. ..	1,170	12	26	0
Main Reef Leader	.. ..	3,096	13	72	2
South Reef	.. ..	1,715	15	86	10

The total footage accomplished shows a considerable increase as compared with the previous period. In the South Nourse section, development operations proceeded favourably. In the west incline, fair progress was made with the dewatering of the shaft with a view to starting sinking. The working profit (£73,763) shows a satisfactory improvement as compared with that for the preceding quarter, due to the increase in the tonnage milled of 10,800 tons, with a reduction in working costs per ton. The payable ore returned as developed for the six months ended July 31, 1912, amounted to 111,000 tons, of a value of 32s. 9d. per ton. The expenditure for the quarter was £1,322 7s. 3d. There is an amount of £22,073 yet to be expended on the present capital expenditure authorised. In addition to this amount it is estimated that a further sum of £21,150 will be required for development connection with the South Nourse section.

### Worcester Exploration.

#### THE LATEST DEVELOPMENTS.

The progress which is still marking the development of the Worcester Exploration and Gold Mining Co. was punctuated last week with a new and expensive plant being started, says the *Gold-fields News*. At the last annual meeting it was mentioned that the directors, at the recommendation of the management on the mine, purposed proceeding with the scheme for utilising the reserve of power at the cataract on the Queen's river adjoining their property, and this was what was put into operation last week. The phenomenal drought this year has rendered the increase of power a necessity in order to maintain the crushing power at the mine, and the diminution of the available electric power has been felt somewhat during the past few months. A contract was placed for the delivery of a powerful generator to be started in May last, but owing to the strike in England the contractors were unable to deliver, and have not done so yet. But they have done the next best thing, they have supplied another generator of equal power, and this was set in motion experimentally on the 1st inst. It was inaugurated formally on the 3rd inst., and will be maintained as a supplementary aid to the driving power of the mine until the new generator has been delivered on the spot, probably in the course of a month or two. The new scheme is an expensive one, the directors having set aside £15,000 for the purpose, and the object of Messrs. Rabie and McIring two of the directors, in proceeding to the mine, was to personally inspect and report upon these new works. The Queen's river is now harnessed in three directions for the purposes of the mine, namely, at the Golden Quarry, new cataract, and at the big dam.

## THE ROOIBERG YEAR.

### A New Feature in the Accounts—Conservative Estimate of Ore Reserves—Gratifying Discoveries at Several Points.

THE annual report of the Rooberg Minerals Development Co., Ltd., for the year ended June 30th, 1912, shows that the revenue from tin concentrates amounted to £105,647 4s. 6d., yielding a profit of £32,721 5s. 2d., while a further £826 5s. 8d. was derived from interest on fixed deposits, making a total of £33,517 10s. 10d., which, together with £39,468 10s. 7d. brought forward from last year, was dealt with as follows:—

Interim dividends Nos. 2 and 3 of 7½% each	£27,000	0	0
Amount written off shaft sinking, development and exploration	20,465	3	9
Appropriated for expenditure on fixed assets	9,865	1	0
Directors' remuneration	1,350	0	0
Government tax	604	9	4
Carried forward	13,731	7	4
<hr/>			
	£73,016	1	5

The net expenditure on capital account for the year amounted to £66,631 13s. 5d., and at the end of the year the excess of cash assets over liabilities amounted to £13,731 7s. 4d. In the report for the quarter ended 30th June, 1912, a statement was made that, in future, shaft sinking, development and exploration would be charged direct to working costs. In the 1911 balance sheet the sums of £10,251 10s. 4d. and £2,000 were stated as assets under the headings of mine development and exploration respectively, while an amount of £8,213 13s. 5d. was included in a similar way under the heading "shafts." It being considered undesirable to carry any of the accounts as assets, these balances have been written off through the appropriation account, as shown above. The whole of the expenditure for the past year, under these heads, has been included in the profit and loss account, which thus reflects a lower working profit than that indicated in the quarterly reports. The matter is referred to in another part of this issue.

#### THE YEAR'S PRODUCTION.

There were crushed during the year under review 20,799 tons, or nearly 3,000 tons more than in the previous year, and the quantity of black tin recovered was 884·58 tons, equal to 789·80 long tons, of an average grade of 67·89 per cent. metallic tin. This compares with 961·83 long tons of an average grade of 67·091 per cent. metallic tin in the last annual return. The average grade of the concentrates shipped is thus slightly better, and now that a Brunton calciner and magnetic separator have been put into operation, it is anticipated that better results will be secured, provided no complex ores are encountered. The average assay of the mill pulp was, however, not equal to that of the preceding twelve months, the value being 4·943 per cent. as against 7·036 per cent. metallic tin, while the extraction was 55·97 per cent., as compared with one of 58·2 per cent. for the year ended June 30th, 1911. This was to be expected, for the high grade selected ores which were accumulated on the dumps in the earlier days of the undertaking have been exhausted. On the other hand, some improvements have been effected in working costs, so that, although development and shaft sinking have been charged in toto to working costs, the latter are only 2s. 1d. higher per ton milled than in the previous returns. The new mill and dressing plant were started in the month of May, and ran 23·90 days before the end of the financial year. They are reported to have proved a success in every way, and much is expected of them in future. Accumulated middlings and slimes from the old plant are now being re-treated. At the 30th June last these accumulations amounted to 44,485 tons of an assay value of 2·51 per cent.

metallic tin, and calculating on a 70 per cent. extraction and a market price of not more than £200, less 10 per cent., the value of these is £125,632.

#### ORE RESERVES.

A striking feature of the reserve assets at Rooberg is the fact that it is impossible to estimate the quantity of ore opened up by development. At the end of June, 1911, it was calculated that there were in sight 21,650 tons of an estimated recovery value of 4·5 per cent. Although 18,329 tons of ore from this reserve were milled and sent to the crusher station during the past year, only 8·9 per cent. of this quantity was actually taken from the reserves, which were taken into account in July, 1911, the balance of 91·1 per cent. being obtained from supplementary bodies adjacent to the main lodes and from development faces. In the previous year 33 per cent. of the ore milled was from the indicated reserves. The reserves as at the end of June, 1912, are given as 21,300 tons of an estimated recovery value of 4·7 per cent. metallic tin. The question that naturally suggests itself is how much profitable development has been done during the past twelve months, in view of the fact that, although the reserves have hardly been touched, the assets under this heading are to-day slightly less than they were last year? The report shows that some 6,150 feet of development have been done in the mine proper, and it is explained that the results "have disclosed features similar to those which prevailed in the past, namely, the existence of payable ore-beds alternating with stretches of unpayable ground." Some satisfactory discoveries have been made during the past year, but it has obviously been impossible to estimate their contents and value, and the usual conservative policy of calculating has been followed. "Attention is drawn to the fact," observes the manager, "that in ore deposits of such irregular character as these are, too much weight should not be attached to the quantity of ore developed per foot driven. The absence of payable ore at a given point in two successive levels does not necessarily denote the absence of ore between those levels, and often rich ore is found in pockets off-winders which was not in the least indicated by so-called development." All that can be said upon the point is that the estimate of 21,300 tons as at the end of June, 1912, is probably far within the limit. The information that development on the 310-foot level, the lowest in the mine, has not yet opened up payable veins is not altogether reassuring on the face of it, but those who know the mine will agree with the manager that "the absence on this level of payable results may, judging from the irregular nature of the deposits, be taken as temporary only." It is satisfactory to learn that "at the East End old workings developments on the Empire lode have been very gratifying, and a number of pockets of high-grade ore located." A large pocket of high-grade ore has been located and opened up in the neighbourhood of the Camp workings also, on what appears to be the junction of several cross-stocks. A feature of the occurrence is said to be the wholesale replacement with cassiterite of country rock in the vicinity of the ore-pockets. In fact, the wide and singularly extensive character of the payable deposits in the property circumstances of no small importance, and tend to throw into the shade the occasional values, whether high or low, of the mine development.

The Forest Creek Dredge company at Kivspitjie completed the erection of its 11th dredge and commenced operations in August. Their work is still in progress, still working alluvial claims, the yield is very small indeed.

### Ferreira Deep.

The directors of the Ferreira Deep have declared an interim dividend of 22½ per cent. (4s. 6d. per share) for the half-year ending September 30. The dividend, which entails a distribution of £204,750, will be paid on or about November 4.

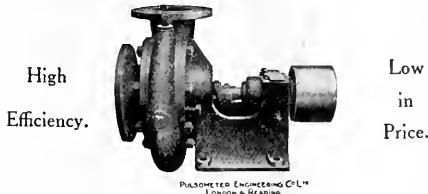
### Consolidated Main Reef.

Mr. G. H. Heydenrych, of Observatory, has issued copies of letters which have passed between himself and the secretary of the Consolidated Main Reef Mines and Estate Co., Ltd., with reference to certain amalgamation rumours. In the last letter from the secretary of the company, the following statement is made: "As I have already told you, no proposal for the amalgamation of this company with any other company is before my board, and as the amalgamation rumours have on more than one occasion been denied officially, my directors see no reason for repeating such denial through any official announcement."

### Cape Asbestos.

The Deputy-Registrar of Claims, of Kuruman Division, reports that the following companies are actively engaged in working asbestos:—Blue Asbestos, Ltd., at Breby; Kuruman District Asbestos Syndicate, of Johannesburg, on the Gathloue Native Reserve; Khosis, Ltd., of Johannesburg, on Gathloue; a syndicate composed of Messrs. Griffin, Lord and Eilers, at Gathloue. He is not of opinion that any of the companies or private persons are making much out of the venture, as the asbestos is very scattered and the working expenses heavy. He further states that the asbestos works in this division are placed at a great disadvantage in having to pay transport charges to Kimberley for this asbestos from time to time, a distance of anything from 120 to 150 miles.

## CENTRIFUGAL PUMPS.

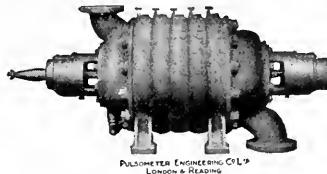


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Transvaal:

### READING:

Works—  
Nine Elms Iron  
Works.  
Harvey & Co., Ltd.  
Johannesburg.

## COKE-MAKING IN NATAL.

### Details of the Manufacture of the Coke that is Replacing the Imported Article.

COKE of good quality is being made in Natal by three concerns, the Natal Navigation Colliery, the Maritzburg Iron and Coke Co., and the South African (Vryheid) Coke Co.

The information available about the manufacture is shown in the following tabular statement, taken from the annual report of the Government Mining Engineer:—

	NATAL NAVIGATION.	S.A. (VRYHEID) CO.	MARITZBURG CO.
Situation of works .. . . .	Five miles on siding from Hatting Spruit station on Durban-Johannesburg line.	Schaap Kopje, three miles from Vryheid.	Sweetwaters station, seven miles from Maritzburg, on main line.
Mine from which coal is obtained	Natal Navigation Colliery.	Vryheid Colliery.	St. George's Colliery.
Seam from which coal is obtained	Bottom Seam.	Difficult to correlate. Probably the same as the Dundas seam at Hibonane.	Bottom seam.
Method of preparation .. . .	First sized and washed in a felspar washer, then crushed.	The coal is first put through a Devil disintegrator and then washed in a Craig washer.	The smalls are washed several times in a washer of local manufacture.
Type of oven used .. . .	Ordinary Bee-hive.	Modified form of Bee-hive.	Rectangular kiln, with central flue in the middle.
Analyses of Coke.			
Moisture .. . . .	3·00 per cent.	1·75 per cent.	0·37 per cent.
Vol tile matter .. . . .	2·23 per cent.	0·30 per cent.	0·16 per cent.
Fixed Carbon .. . . .	80·45 per cent.	87·75 per cent.	88·09 per cent.
Sulphur .. . . .	1·45 per cent.	(0·69 per cent.)	0·90 per cent.
Ash .. . . .	12·82 per cent.	10·20 per cent.	10·86 per cent.
Physical qualities .. . . .	Hard and compact.	Hard and dense.	Hard and compact.
	Sp. gr., 1·228	Sp. gr., 1·2.	Sp. gr., 1·6.
Output per month .. . .	200 tons.	125 tons. Could put out 200 tons.	150 tons. Could put out 200 tons.

The coke made by these companies is now replacing imported coke to a large extent in Natal and in the Transvaal. A Blue-book containing notes on "Coking Tests for Transvaal Coals," with a report by Mr. F. W. Harbord and the re-

sults of the tests carried out in England, was laid on the table of the Union House of Assembly during the 1912 session, and can be obtained from the Government Printer, Pretoria.

## THE PRESENT POSITION IN KATANGA.

### Resuming Smelting Operations—Further Supplies of English Coke Landed—Why the South African Houses have Held Aloof.

A DENSE cloud of mystery still appears to veil the smelting operations of the Tanganyika Concessions, Ltd., and exactly what policy is to be engaged in for the immediate future is unknown outside of the innermost official circles.

#### THE QUESTION OF COKE.

It is known that there has been considerable reorganisation, both in regard to staff and equipment, in Katanga since the beginning of the current year, but nothing official or definite has been announced as to the course that will be adopted in the future. The last annual report made it quite clear that if English coke only is used in the smelting of Tanganyika ores the outlook as regards the payment of dividends is an uncommonly bad one. By using English and Wankie coke together the cost of production was substantially less, and by employing Wankie coke alone a still further reduction in the cost of reduction was effected. The Wankie people are known to be installing an extensive coke oven plant, and preparing for the delivery of a large and continuous supply for the Lubumbashi smelters. Meanwhile, English coke is arriving, and smelting operations are due to be resumed next week. Since the closing down of the smelters a washing plant has been installed for the purpose of treating ore prior to its being despatched to the smelters. The additional treatment is anticipated to give much better results than formerly were obtained. It is understood that the supply of coke from the Wankie Colliery has been delayed by the non-arrival of a washing equipment which is expected to be delivered at Wankie in the course of a week or two. The machinery was shipped from England on the 26th of last month. At the commencement of operations the smelters will be run on English coke, of which 2,000 tons have been landed.

#### A BELGIAN RUMOUR.

Whether there is much truth in the statement circulated in Belgium, which is to the effect that the engineers

have discovered a new and satisfactory method of treating Katanga ores and the proper mixing of them with coke for the blast furnace, it is difficult to say. It is stated from the mine and the head office of the company that we are, however, fully aware of the fact that some experiments have been conducted as experiments to try of finding a suitable smelting charge rather than for productive operations. The copper ores of the Southern Congo, regard to their metallurgical peculiarities and geological position, present many unique treatment problems, and despite the policy of the directors in clearing the metallurgical issues involved, it is quite clear from the official and semi-official statements published to date, that the question of treatment still awaits solution. Meanwhile, the railway is rapidly being pushed on with from Elizabethville, and should at a very early date reach Kananga, where are the most important cupiferous deposits as yet undeveloped in Belgian Congo.

#### MORE LIBERAL MINING LAWS REQUESTED.

Admittedly hereupon work has been advised by the Belgian Government, the Union Miniere, the Tanganyika Concessions Company, and the railway contractors in the Southern Congo during the last decade. The note of the past that so far these titanic labours have met with very limited success. Further large sums of money will be required to complete the programme of mineral development and secure direct and efficient communication between Katanga and the natural gateway of South Central Africa at Pointe Bay, on the coast of Angola. Such capital will doubtless be found, but it would be more readily forthcoming were the Congo mining laws amended. We know for a fact that the illiberal and parsimonious regulations of the Congo Administration have been quite as important a factor in deterring the large financial houses of South Africa from interesting themselves in the Katanga copper field as have been the metallurgical difficulties which the Tanganyika Concessions Company are still apparently grappling with.

#### Mining Progress in Natal.

There is very little to note in the annual report of the Deputy-Commissioner of Mines, Pietermaritzburg, covering last year. It gives a brief summary of matters of general interest which should be noticed: "The coal mining industry has continued to grow, and, despite the scarcity of labour, the output for 1911 is greater by 120,168 tons than in any previous year of its history, the output for the year 1911 being 2,411,911 tons. No new collieries were added to the number which were outputting in 1910, but many of the leading collieries now have increased facilities, as a result of more up-to-date plant recently installed, which will enable them to considerably increase their output. The supply of coal was above the demand, and the price was, consequently, low. This condition of things naturally affected the smaller collieries most severely, as in some cases they were able to sell only a portion of their output. The position of coal mining undoubtedly indicates the necessity for finding further markets, and, if it were possible to secure an increased export trade, considerable expansion in this industry is possible. Under present conditions some of the companies are working at a loss, and the necessity for altering this state of affairs is apparent. Mining for minerals, other than coal, has not been prosperous. Gold mining has, however, received rather increased attention, and, as a result, some very promising mines are being developed.

which may alter the condition of things considerably when they commence outputting. Copper mining has hitherto been to a standstill. The deposits which would probably have a chance of success are mostly situated long distances from the railhead, where transport by road is both difficult and expensive. Increased attention will, no doubt, be given to these propositions when railways are extended and better transport facilities afforded."

## ROBESON-DAVIDSON PATENT CENTRIFUGAL PUMPS

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## TRANSVAAL CHAMBER OF MINES' MONTHLY REPORT.

### Industrial Questions Reviewed.

The report of the Executive Committee of the Transvaal Chamber of Mines, presented to the monthly meeting on Thursday, contained the following:—

*Finance.*—During August the disbursements amounted to £2,705 19s. 4d. (including £798 14s. 10d. handed to the Transvaal Miners' Phthisis Sanatorium), and the receipts (including £658 2s. 2d. received on account of the Transvaal Miners' Phthisis Sanatorium), to £1,008 6s. 4d. The balance to credit of current account on 31st August was £5,175 5s. 2d. The sum of £10,000 remains on fixed deposit.

*Native Labour.*—The returns supplied by the Witwatersrand Native Labour Association, Ltd., show the following results for the month of August. Number of natives employed by members of the Association on last day of month (including natives in the service of mine contractors, but excluding natives in the employ of members of the Association in the districts of Barberton, Breyton, Roodeberg and Louis Moore): On Gold mines, July, 182,925; August, 179,111; on coal mines, July, 8,497; August, 8,766; on diamond mines, July, 15,834; August, 15,934; totals, July, 207,256; August, 203,811. Recruitin' Results.—The Witwatersrand Native Labour Association also furnishes the following information with regard to the natives recruited by the Association and its members during the month of August, 1912, and the districts whence they were obtained. These figures do not include natives recruited by mine contractors. The corresponding figures for the month of July are given for the purpose of comparison:—

Source.	July.	August.
East Coast—		
South of latitude 22 deg. S. .... .. .	2,521	3,756
North of latitude 22 deg. .... .. .	—	3,125
British Nyasaland Protect. (Independents)....	—	46
Cape Province.... .. .	3,913	3,966
Transvaal Province .... .. .	807	679
Basutoland and O.F.S. Province .... .. .	1,473	1,490
Bechuanaland .... .. .	169	184
Natal Province .... .. .	510	640
Swaziland .... .. .	260	300
Rhodesia (including via Pietersburg) .... .. .	130	86
Local .... .. .	6,458	7,109
	<hr/> 16,241	<hr/> 21,381

The monthly report issued by the Department of Native Affairs shows that at the 31st of July, 1912, 311,097 natives were employed in labour districts of the Transvaal. Of this number, 219,648 were engaged on mines and on the various classes of works specified in part I. of the Coloured Labourers' Health Regulations, 1906, and 91,449 were in other employ. In the report of your Executive Committee for May last reference was made to the employment of a joint committee of the Municipal Council of Johannesburg, the Johannesburg Chamber of Commerce and this Chamber, for the purpose of collecting and preparing evidence with regard to the working of the Native Pass and other Laws, and generally to discover the causes of and to suggest remedies to be applied in regard to what is locally described as the Black Peril in our midst. The work of this committee is practically concluded, and it has embraced some valuable information which will be placed before the Government Commission appointed on the 2nd of July to inquire into the question of assaults on women and the general control of natives.

*Outbreak of Smallpox.*—On the 25th of July it was reported that smallpox had broken out in the town of Johannesburg, and your committee, on the suggestion of the Medical Officer of Health of the

Municipality, took steps immediately to impress on the managers of the mining companies within the municipal area to insure effective vaccination of all natives and white persons on the mines that had not been so protected within the last three years. Thus far the mines have been almost immune on this occasion from the disease, there having been only three cases reported as having occurred, which were promptly dealt with in accordance with the Municipal Regulations.

*Mines and Works Act.*—Under section 277, sub-section 3, of the regulations under the above-named Act, certain mining officials are required to be in possession of a certificate "of an ambulance association recognised by the Minister, testifying that the holder has attended a course of first aid, and is qualified to render first aid to the injured, with special reference to mining accidents," by the 1st of January, 1913. Arrangements are being made with the St. John Ambulance Association for the holding of classes of instruction at the mines, in order to enable the men concerned to qualify under the Act. The Chamber has been advised that a Joint Committee of the Chemical, Metallurgical and Mining Society of South Africa and the St. John Ambulance Association is at present engaged in organising competitions in practical ambulance work. Competitions for trophies will take place towards the end of the year. One of these trophies for workers underground is being presented by the first-named body. The Miners' Phthisis Prevention Committee, the appointment of which was notified in your Executive Committee's report for March last, has issued a Parliamentary report. Copies of this report have been issued to the members of the Chamber for their consideration.

*Local Government Ordinance.*—This Ordinance, which has been enacted by the Provincial Council, consolidates the laws affecting municipal government, in so far as they are within the province of the Provincial Council. The Chamber gave evidence before the Select Committee of the Provincial Council on various points affecting mining companies. Certain of the Chamber's recommendations have been embodied in the Bill, but the principle which the Chamber urged, namely, that municipal services affecting public health should be furnished to ratepayers at cost, or, at any rate, that the municipal profits should be limited in extent, has not been accepted. The Roads Ordinance has been passed by the Provincial Council. The principle of preserving the Precious and Base Metals Act untouched has been accepted and embodied in the Act. It has also been laid down that the alteration in the law of prescription as regards roads does not affect those running over proclaimed land or land held under mining title. The Local Authorities Rating Ordinance has also been passed, and the definition of rateable property, in so far as it affects the mining industry, has not been enlarged so as to include property which under previous Ordinances was not subject to taxation. Consultations took place of representatives of the Public Works Department, the Benoni Town Council, the Springs Municipality, and a sub-committee of this Chamber as regards extension of the Main Reef Road to Springs, with the result that a route was agreed on which it is considered will best serve the general interests. It was reported to the Chamber that considerable quantities of brass and copper fittings on disused or suspended work were stolen, and in consequence your Executive Committee issued a circular suggesting the stamping of these by a proper die stamp, for the purpose of identification and prevention of theft. The question was asked for an expression of opinion in regard to the question of classification of machinery, and a sub-committee of the Chamber reported on the basis of the recommendations contained in the memorandum of the Johannesburg Chamber of Commerce, as notified in a report of the Executive Committee of that body dated the 2nd of August. The following change in representation has taken place: The Vereeniging Estates, Ltd.—Mr. Lewis Marks vice Mr. C. W. Villiers; Braakman Mines, Ltd.—Mr. A. F. Lyall vice Mr. J. G. Hamilton, deceased.

### Mining in the Cape Province.

There is very little to note in the annual report of the Mines Department under the output of precious minerals in the Cape Province. Some work is being carried out in the Knysna, Prince Albert and Mafeking Divisions. The total output for the Province for the year under review was 73,052 fine ounces, valued at £310, as opposed to £100 for the previous year. The total output of base metals for the Province for the year under review was 131,811,581 tons, valued at £609,030, showing an increase in value of £100,594 over the previous year. The chief contributors to this output were: Coal, 89,023 tons, valued at £51,550; copper, 21,019 tons, valued at £503,908; asbestos, 1,253,170 tons, valued at £20,765; salt, 17,791 tons, valued at £26,893. The other minerals worked are tin, manganese, lime and

crocidolite. The total output of diamonds for the Province for the period under review was: 2,250,505·38 carats, valued at £5,506,412, showing an increase of £298,753 over the previous year.

### MINING EXAMINATIONS.

Private individual tuition for Mine Managers', Mine Captains', Mine Surveyors', Mechanical Engineers' and Engine-drivers' Examinations. Practical Mathematics and Electro-technics. Correspondence lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 10, Anglo-Austrian Buildings, Box 2061, Johannesburg.

# Rhodesian Section.

## LATEST MINING NEWS.

### The Chishawasha Tin Field—Activity Around Gatooma—The Matabele Queen's Company—Government Batteries—Coarse Crushing at the Bushwick.

WORK is proceeding satisfactorily on the tin field recently discovered in the vicinity of Chishawasha, Mashonaland, and the results of the exploratory work so far carried out seem to indicate that a very large and valuable occurrence of cassiterite in schist has been located. We are not at the moment at liberty to disclose the data resulting from initial development; but there appears to be reason for believing that the discovery is of the very highest importance. Work is proceeding under the direction of Mr. J. R. Williams. The owners at present wisely prefer to await the results of further development rather than make any statement as to the probable extent and value of the occurrence based on the exploitation carried out to date.

\* \* \* \* \*

In the course of the first annual report of the Gatooma and District Chamber of Commerce appears the following: The mining industry has maintained a satisfactory position, has steadily improved, and the outputs for each month of the year have equalled, at all events, those of the previous year. A large amount of mining capital has been withdrawn from development and prospecting work, but nevertheless, new life has lately been infused by the small worker, who has at all times been responsible for the progress and development of the mining industry in this district. At the moment there are no fewer than nine reduction plants in course of erection in this district, and within a radius of twenty-one miles of Gatooma there are thirty-seven mills working. It may also be within the knowledge of the members of this Chamber that a number of properties which are now in hands of companies are approaching a stage at which they will be requiring larger plants, so that we may look forward with confidence to a further increase in the near future in the gold output of this district. The committee have approached various Government Departments with a view to securing the general improvement of transport facilities in the district, and although we cannot claim to have effected much, yet it is encouraging to report the practical completion of the roads from Gatooma to the Glencairn mine and from Gatooma to the Golden Valley mine. Portions of the road from the Golden Valley to the Shagari have also been put in order. Under the aegis of the Chamber a small public committee secured funds from the townspeople of Gatooma and cut a track from a point near the Dreadnought mine to another near the Warthog mine. This track has shortened the distance from Gatooma to Mabel's Luck mine to twenty-one miles as against a former thirty miles to the same point *via* the Golden Valley; in addition to which it touches a number of mines *en route*. Representations

might, with advantage, be made to the Government to have portions of this track metallised before the advent of the wet season. Much still remains to be done, however, towards improving the various roads radiating from Gatooma. The distance between Mabel's Luck and Gatooma can still be considerably shortened by straightening and shortening the present track from Gatooma to the Dredge port.

\* \* \* \* \*

The *Rhodesian Mining Review* understands that the Matabele Queen's Company has taken a 12 months' working option on the Up-to-Date, belonging to Mr. C. E. G. Cummings. Developments on the Matabele Queen's Mine are giving every satisfaction and some promise of exceeding original anticipations. The shaft is due to reach the sixth level within the next few days, and will be continued without loss of time until down to the seventh level, which may take another two months. Cross-cutting on both the sixth and seventh levels will then be proceeded with, and present indications are borne out by the results of this work, it is more than probable the milling basis of the plant will be increased to 20 stamps.

\* \* \* \* \*

At the monthly meeting of the Small Workers and Traders' Association, held at H. Riley a few days ago, the question of urging on the Government the need of assisting the small worker without capital by the erection, in various centres, of 5 or 10 stamp mills, was the subject of considerable discussion. A letter from Mr. F. W. Denbigh, who is interested in the matter and has already stated his views therein in the public Press, was read. Ultimately it was resolved to invite Mr. Denbigh to attend the next monthly meeting, when the whole matter could be fully discussed. In the meantime, it was considered that data could be collected in regard to the success, or otherwise, of similar Government batteries erected in various parts of Western Africa.

\* \* \* \* \*

By crushing 5,221 tons last month with 20 stamps at 27 days, the Bushwick mill has attained a capacity of 90 tons per stamp. This has been accomplished by the selection of the coarsest mesh screening, i.e., only 1/4 inch to the ore, namely, quarter-inch by half-inch. After passing the screens the pulp passes to pumps which throw it up, due to a distributor from whence it passes through pipes to be re-ground. The product leaving the fine screens and the coarse particles are returned to the table. The tail contains from 3 to 6 per cent. of gold when sent on to the cyanide works.

### Bucks Reef.

The secretary advises that the following are particulars of last month's working results, viz.:—Tons crushed, 758; yield, £1,198 8s.; loss, £667 11s. 9d.

### Lonely Reef G.M. Co.

The following telegram has been received from Bulawayo giving the output of the Lonely Mine for the month of August: "Mill results last month, 645 hours, 3,819 tons, 1,160 ozs. fine gold; cyanide sands, 3,819 tons treated, 2,362 ozs. fine gold; estimated value of output, £14,807."

### INVESTORS' DIARY.

The following company meetings have been announced:

- Sept. 21.—Wit. Deep.
- Sept. 23.—Crown Mines.
- Sept. 27.—Sub Nigel; Simmer and Jack Prop.; New Kleinfontein; Wolhuter, G.M.
- Oct. 19.—Wolhuter, G.M.
- Oct. 23.—Johannesburg Consolidated Inv. Co.
- Oct. 29.—Jumpers G.M.C.; Zakopane, T. M. & Co.
- Oct. 30.—Roober, M. & Sals., Nourse M.
- Nov. 6.—New Middelfontein.
- Nov. 27.—New Bekslag G.M.; Rand Kep.

## THE GEOLOGY OF THE VICTORIA TIN FIELD.—II.\*

[By H. B. MAUFE.]

### STRUCTURE OF THE METAMORPHIC ROCKS.

These two groups of metamorphic rocks have been intensely folded. The folds are isoclinal, that is, both limbs dip in the same direction, and approximately at the same angle. Their general trend in this district is N.E.-S.W., but it is more nearly east and west in the western part. The general dip of the rocks is to the south-east, and the angle of dip is high ( $70^{\circ}$  or more). Cleavage and foliation are not pronounced. They are best developed in the sedimentary schists in the epidiorite group and in the phyllites in the Banded Ironstone group. In both cases the foliation planes are inclined at high angles, approximately parallel to the dip of the beds.

*Granite.*—The metamorphic rocks are bounded on the north, east, and for some distance on the south by a medium-grained massive grey biotite granite, which was intruded after the period of folding and metamorphism. A break in the continuity of the granite occurs to the north of Mara Ranche, and through this break the metamorphic rocks are said to be continuous with the Gutu "schist-belt." To the north-west of Hurrell's Kop a long tongue runs out westward from the granite and is crossed by the road to Victoria a short distance west of the drift through the Popotekwe river. In this tongue the granite becomes finer in grain and porphyritic, passing into a porphyry full of felspar phenocrysts, and finally at its edge into a quartz-porphyry with a felsitic matrix. Near the Popotekwe river the porphyry has a streaky structure running parallel to its length, which is probably due to flow movements in the magma during consolidation. The granite contains aplite and pegmatite veins, especially near its margin, but they are not greisenized and none of them have been proved to contain cassiterite.

*Dolerite* dykes were met traversing the metamorphic rocks in a few places, and their positions are indicated on the map. The trend of the dykes is E.N.E.-W.S.W., or nearly so. Thin slices of these dykes show that they are olivine dolerites, and that they bear no traces of shearing whatever. The felspar is fresh and is generally acid labradorite. The augite is of a pale purplish-brown colour and encloses the felspar in ophitic fashion. Olivine and iron-ores are not abundant, and a little hornblende and biotite are sometimes present. A remarkable feature of some of these dykes is the presence of quartz and of a micrographic intergrowth of quartz and felspar. In fact an olivine crystal and micropegmatite may be seen in the same field of view under the microscope. A sill of dolerite forms the base of a small koppie west of the old Gem Mine mill known as Mauve Kop. This sill appears to be intruded into a sill of pegmatite and lepidolite rock. The latter doubtless belongs to the later stages of intrusion and consolidation of the granite masses. Thus it is likely that the dolerites here, as elsewhere in Southern Rhodesia, are later than the granites.

*Comparison with Enterprise.*—The general geological features are very similar to those of Enterprise district. Some points of resemblance have already been touched upon above. In particular, in the two districts the metamorphic rocks are similar down to insignificant details; they are folded and metamorphosed to the same degree. The general strike, however, in Enterprise is more nearly east and west, whilst the general dip is northwards instead of southwards. In both districts the metamorphic rocks are surrounded on three sides by granite and traversed by dolerite dykes. In both districts the pegmatite dykes in the granite are not mineralized, whilst those in the metamorphic rocks are frequently greisenized and carry tin-stone.

### THE TIN REEFS.

The tin-stone reefs are quite similar in their composition to those of the Enterprise district. In all cases examined they consist of greisenized pegmatite, and in one place or another show all the stages of alteration from pegmatite to greisen. The normal pegmatite consists of quartz and felspar, and occasionally it contains brown or white mica, red garnets, or magnetite. The felspar includes orthoclase, microcline, and a certain amount of oligoclase, belonging, as might be expected, to those species found in the neighbouring granite. The pegmatite dykes are obviously related by their mineral composition to the neighbouring granites, but are richer in the later and more "acid" products of consolidation. The quartz and felspar are intimately intergrown, often giving rise to the variety called "graphic granite." The texture is very coarse, but large and rapid variations in this respect are characteristic. The most obvious sign of the alteration of the pegmatite is the presence of the lithium-bearing mica, lepidolite, the purple, lilac or mauve colours of which are now well known. In some dykes it has a pale green colour, in others silvery white. If of the last-named colour, muscovite, which occurs in some of the unaltered pegmatites, may be mistaken for it. In the absence of means for chemical tests, these colourless micas can be distinguished with a fair amount of accuracy with the aid of a pocket-knife. If a cleavage flake be torn off, the muscovite comes away more readily than the lepidolite and the flake is at the same time much more flexible. The reflection of light from the lepidolite is formed from the potash-bearing felspars (orthoclase and perhaps microcline) by the action of the pneumatolytic gases which also introduced the tin-stone. The soda-lime felspar (oligoclase) is also altered, and in place of the large crystals seen in the normal pegmatite, is found a fine-grained aggregate, having a dull white sugary appearance. This sugary felspar which is commonly found in the dykes containing cassiterite, is andesine. In a dyke so far altered the original orthoclase, microcline, and oligoclase have usually completely disappeared, but remain in the form of rounded crystals encircled by mica and sugary felspar are sometimes seen. The change has been effected by the mineralizing agents, which brought in the tin. The potash felspars have been converted into lepidolite, as has so often happened in tin-bearing dykes, whilst the soda-lime felspars have recrystallized as andesine. It appears that the soda molecule of the soda-lime felspars has been removed in part, but it is not easy to see what has happened to it. Parts of some of the reefs are simply greisen, consisting of quartz and lepidolite. These portions must have consisted originally of quartz and potash felspar alone. The comparative rarity of true greisen is thus accounted for by the almost universal distribution of soda-lime felspars throughout the pegmatite dykes. The minerals commonly associated with tin-reefs, as a result of mineralisation, are not all common in the Victoria tin field. Black tourmaline has been found in one or two places, but I have seen no topaz or fluor spar from the reefs.

*Cassiterite.*—The cassiterite, like that found in the Enterprise district, is almost dead black in colour, but here it commonly shows good crystal forms. These forms have not been worked out, but it is of interest to note that they do not give rise to the ordinary stout prisms, but appear to be pyramidal forms, which, by repeated twinning, produce very complex groups. The distribution of the cassiterite within the reef can only be described as patchy or irregular. Occasionally it occurs in great abundance in the walls of a reef, but this is not so common an occurrence as to excite comment. In a reef on the east bank of the Rurukwe river (Lemoenfontein farm) the small tin-stone crystals are ar-

\* Reprinted from the Report of the Director of the Rhodesian Geological Survey, 1911.

ranged in lines which frequently branch upwards, like the boughs of a tree, but usually there is no definite arrangement. The size of the cassiterite crystals varies with the coarseness of grain of the pegmatite. In the fine grained greisen the tinstone is fairly uniformly distributed in small crystals. From this fine-grained rock one finds all degrees of coarseness up to giant pegmatites, in which the quartz occurs in great "blows," the lepidolite in large masses covering many square yards, and the felspar in aggregates of huge crystals. One of the felspar crystals which I measured in the southern part of Koestlich's claims, was not less than 11 ft. in length. These large crystals belong to the original pegmatite. When the dyke is thoroughly greisenized, they are replaced by a white sugary mass of small crystals, as explained above. It is in the neighbourhood of these "giant pegmatites" that the large lumps of cassiterite "float" have been picked up. One lump which I saw must weigh about 2 cwt. I am of opinion that in such reefs the tinstone will be found distributed in pockets in a very irregular manner.

*Lepidolite*—In the pegmatites, the tinstone is usually of meagre thickness and therefore of little value and useless for the production of tin. The cassiterite contains about 5 per cent. of tin, and the other minerals from which the tin may be derived are not yet prepared. It appears that during the last few years the tin has exceeded the demand, and the price of tin has therefore ruled low. Whilst lepidolite is associated with cassiterite in tin-bearing dykes here, it is not so closely associated with cassiterite as is associated with the tiniferous quartz, and is found in large masses of cassiterite itself. If the felspar has been replaced by lepidolite, there is little doubt that the tiniferous quartz will also be replaced, and in Enterprise, would have been discovered were it not for the large masses of lepidolite that the tiniferous quartz and its colours had naturally attracted attention. This is left over to specialists for determination, and I am afraid that the back adverse reports as far as the effects were concerned.

(To be continued.)

## MINING MEN AND MATTERS.

Dr. Corstorphine, the well-known Transvaal consulting geologist, has been on a visit to Salisbury.

\* \* \* \* \*

Mr. Ben Weil, one of the directors of the London and Rhodesia group, has been visiting Gadjzena.

\* \* \* \* \*

Mr. G. W. Wood, a director of the Bucks Reef Gold Mine, Ltd., left Bulawayo a few days ago for Port Elizabeth, en route to England.

\* \* \* \* \*

News has been received by cable that Mr. T. Lane Carter, who used to be well known on the Crown Deep, and latterly as manager of the French Rand mine, has died in America.

\* \* \* \* \*

Last week-end the Potgietersrust district was favoured by a visit from Sir George Farrar, Messrs. Gau, D. M. Munro, Chas. Maggs, and Mr. Gilbertson (the new manager of the Zaaiphants mine).

\* \* \* \* \*

Former students of the Royal Technical College, Glasgow, are reminded that the fourth annual dinner will be held at the Grand National Hotel on Saturday, 28th September. Tickets can be obtained from Mr. James Gray, P.O. Box 5254, Phone 4240, Johannesburg.

\* \* \* \* \*

The ordinary general meeting of the South African Institute of Electrical Engineers was held in the Lecture Theatre, South African School of Mines Building, on Thursday evening, at 8 o'clock. Discussion was continued on "The Design and Installation of Transformers from an Operating Point of View," which was opened by Mr. C. W. R. Campbell at the May meeting; "A Few Examples of Electrically-operated Mechanical Appliances," by Mr. H. Collins. Papers for reading were: "Some Practical Aspects of Electric Winding," by Mr. S. E. T. Ewing; "Practical Operation of Three-phase Hoists at the Bantjes Consolidated Mines, Ltd.," by Mr. J. Askew.

\* \* \* \* \*

The ordinary general meeting of the Chemical, Metallurgical and Mining Society will be held in the Lecture Theatre, South African School of Mines, to-night (Saturday) at 7.45 o'clock. The agenda paper states that demonstration will be given by Mr. Andrew F. Crosse of Avery's slime pulp balance. The metallurgical paper for reading is "A Research on Refractory Gold Ore," by Mr. Morris Green, and the papers for discussion are "The Surface Workers on the Rand and their Technical Education," by Mr. F. J. Pooler, B.Sc. (Mr. W. Cullen will read a contribution to this discussion); "Notes on the Cyaniding of Concentrates," by Mr. Robert Linton.

## The British Coal Strike and its Local Influence.

In commenting on the improved tonnage requirements by South African collieries, a correspondent writing to *The Times*, *Gardiner* makes one or two interesting points in regard to the effects of the British coal strike on the South African market. In view of the freedom from strikes enjoyed by the coal-mining areas of the Union, *Inter alia*, he writes: "The benefits of the recent strike have not been as much felt by the Transvaal as the Natal coal-fields, and during the short time it lasted the Middleburg collieries of the Transvaal were well employed, but without at all showing any improvement in the matter of selling prices. This is due to the fact that the bulk of the output of the collieries in the Transvaal is supplied by the Collierymen's Association by contract, a custom which has always been observed by the collieries in the Transvaal even before the association was formed. As the collieries naturally regulate their output to their contract requirements, and not the reverse, as is the case in Europe, they have but little scope for local strikes, and, except period strikes, and cannot therefore take full advantage of general and temporary changes in the market." Moreover, in the Transvaal and Natal the shipping expenses are so high that it is not in such a manner as to give them incentive to increase their output in such quantities as they may require, and, should such a strike appear to fail, or prices soar beyond what the miners consider reasonable to pay, the position therefore is that they will not strike. As far as the Welsh strike that local collieries are compelled to do the same as regards the demand of miners, or to offer better terms or better prices. Still, as pointed out by Mr. G. S. Stables, of Allerton collieries, the unskilled miners of the coal-fields are too ignorant or too unmobilised to submit to such demands, and they refuse to full advantage of a rise in wages which does not affect them. They put themselves for periods extended, for instance, to 12 months, and thus impart a uniformity to their strike. This is the reason why it is beneficial to all concerned, and to the public, that contracts should be entered into, and that the miners' demands, of course, prevent the collieries from increasing their output, as did the case in the Welsh and Australian strikes, and that they do not sell at low prices, but they tend to stimulate the market, and thereby promote the uniformity so desired in the coal trade.

Messrs. Pauling & Co., Ltd., contractors to the Government of Bengal, Katsanga railway, are engaged in the construction of the reached Humble, 300' long, 10' wide, 10' high, and 10' deep, and at this point the work is now in progress. It is to be completed in October, and is now of very little value. The work has been completed and is sufficient to meet the requirements of the contractor, and is available against owing to him. The contractor has made a definite offer for the same.

## E. J. MOYNIHAN,

CONSULTING ENGINEER.

PLANS, SPECIFICATIONS, REPORTS AND ADVICE, MINING EQUIPMENT, STRUCTURAL WORK AND FINANCIAL ADVICE.

## THE WEEK IN THE SHAREMARKET.

### Fluctuating—Paris Still Buying.

THE feature of the week has been a slight reaction, due to profit-taking, and the inevitable hesitation of a rising market. Paris, however, appears to have restarted buying on Thursday, and this may mean a better tone at the close of the week. There is nothing in the European situation to cause alarm, and the outlook for the market continues good. The public on this side appears to be coming in gradually, and there is a great increase of interest taken in the market generally. Diamonds still lead the way, but the high priced stocks are not largely held locally, and the diamond syndicates reflect the improvement. Tins continue to pursue an erratic course, for reasons that are wrapped in mystery. The fluctuations of the week are shown below:—

	Friday,	Sat.,	Monday,	Tuesday,	Wednesday,	Thursday,
	13th	14th	15th	17th.	18th.	19th.
African Farms	... 18	18	18	17	17	17
Aldair-Usher Process	... 1	1	1	1	1	1
Apex Mines	... 34	0	33	33	33	33
Aurora West	... 10	10	10	10	10	10
Bantjes Consolidated	25	9B	26	25	25	25
Benonis	... 5	0B	5	5	5	5
Bushveld Tins	... 1	1B	1	2	1B	1B
Brakpan Mines	... 82	6B	82	82	82	82
British S.A.	... 29	6B	29	0B	29	0B
Blaauwbosch	... 26	0B	26	6B	26	0B
Cind-rla Cons.	... 25	9B	—	25	6B	—
City and Suburban	45	6	46	0B	47	6
City Deep	... 66	6B	67	6	67	65
Cloverfield Mines	... 8	1B	8	0	7	6B
Cons. Langlaagte	29	0	29	9	29	3B
Cons. Main Reefs	20	3	20	3B	20	0
Coronation Freeholds	0	10B	0	7B	0	6B
Con Investment	—	—	23	0B	—	—
Crown Mines	... 113	9B	143	9B	145	0B
Concrete Cons.	... 7	0B	7	7	0B	—
Cons. Mine Selections	14	0	13	9B	14	6
East Rand Cent.	... 14	0B	14	0	14	9
East Rand Coals	... 2	7B	2	6B	2	6B
East Rand Deep	... 3	0B	—	3	5B	2
East Rand Proprietary	58	6B	58	6	58	6B
East Rand Deb.	£93	£93½	£93	£93	£93½	£93
Eastern Gold Mines	2	4	2	3B	2	3B
Frank Smith Diam.	9	0B	10	0F	10	6
Govt. Areas	... 26	4	26	3	24	0
Glynn's Lydenburgs	—	—	27	6B	29	0B
Glencairns	... 4	0B	4	0B	4	3B
Glencoo (Natal) Coils	6	3B	6	3B	6	6B
Geduld Prop.	... 29	0B	29	0B	28	6B
General Minings	... 26	0	26	0B	25	0B
Jupiters	11	6B	12	6B	11	6B
Kaalfontein Diamonds	0	4B	—	0	3B	—
Klerksdorp Prop.	... 3	3	3	5B	3	0B
Knight Centrals	... 15	9	15	9	15	3B
Lappaardsvllei Estates	13	6B	13	9B	13	6B
Lace Prop.	... 5	3B	5	5	2	5
Lydenburg Gold Farms	2	10	2	11B	2	10
Main Reef Wests	... 24	0	23	6B	23	3B
Middel B's	... 72	6	71	9B	71	6
Middelvlei Estates	1	9B	1	7B	1	6B
Modder Deep	... 41	6B	41	6	41	0
Meyer & Charlton	... 101	3B	101	3B	100	0B
New Eras	... 9	2	9	0B	8	9B
New Kleinfontein	27	0B	28	3	28	6B
New Rietfontein	... 9	0B	8	6B	8	0B
New Uniteds	... 18	0B	18	0	18	0B
New Boksburg	... 2	6B	2	3B	2	0B
Nigels	... 20	0B	19	0	20	2B
New Geduld Deep	3	1	3	0B	3	0
Orange Diamonds	... 1	9B	1	9B	—	1
Premiers Deferred	257	9B	256	3B	255	0B
Pigg's Peaks	... 18	3B	19	9B	—	19
Pretoria Cement Co.	52	3B	51	0B	56	0

b Buyers.

s Sellers.

	Friday,	Sat.,	Monday,	Tuesday,	Wednesday,	Thursday,
	13th.	14th.	16th.	17th	18th	19th.
Paardekraal Estates	1	0B	1	0B	1	0B
Potchefstr om Est.	—	—	1	3B	1	3B
Princess	—	13	0	12	9	12
Rand Nucleus	—	—	3	7B	3	9B
Randfontein Estates	34	3	34	6B	34	6
Randfontein Deep	5	9B	5	6B	5	6B
Rooiberg Minerals	31	3	31	6B	31	0
Rand Klips	—	5	6B	5	1	5
Ryan Nigels	—	4	0	4	0B	—
Roberts Victors	... 26	0B	26	0B	26	0B
Rood. Durban Deep	27	6B	27	6B	27	6B
Rose Deep	—	—	67	6B	—	—
Simmer Deep	—	—	4	6B	—	4
South African Lands	5	2	5	3	5	9B
S. Randfontein Deep	4	6B	4	0B	4	6B
Sub Nigels	—	8	6	8	3	8
Springs Mines	... 18	3B	18	6B	19	0
S. A. Breweries	—	39	6B	—	—	—
Shebas	—	5	3B	5	9B	5
Trans. G.M. Estates	57	6	58	0	60	0s
Trans. Coal Trusts	—	51	0B	50	6B	51
Tudors	—	1	6B	1	6B	1
Trans. Cons. Lands	33	0B	—	—	—	—
Van Ryn Deep	—	21	0	21	3	20
Village Deep	—	45	0B	45	9	45
Vogel Cons. Deep	—	1	3B	1	3B	1
Van Dyks	—	3	0B	5	0	5
Witwatersrand	... 63	0B	63	6	62	6B
Wolhuter	—	21	0	20	9B	21
Witbank Collieries	—	43	3B	43	0B	43
Wit. Deep	—	57	6B	56	3B	59
West Rand Est.	... 15	9B	16	3B	16	9B
West Rand Con.	—	15	9B	16	3B	17
Zaaiplaats	—	32	6	34	0	33

b Buyers.

s Sellers.

### Kuruman Diamond Diggings.

The Deputy-Registrar of Claims reports that: "The year 1911 has been the third year of the existence of the alluvial diamond diggings at Mahura Muthla, in this division. These diggings boomed during the months of April to July, after which a great number of diggers left for the new diggings at Mooifontein, in the Transvaal Province. At one time about 120 diggers were actually working on Mahura Muthla. Some diggers reached promising formation at a depth of about 30 feet, but were driven out by water in such quantities that it could only be controlled by expensive pumping machinery, which they were not in a position to procure. The mining is principally confined to an area of about 500 yards by 100 yards in extent. Some diggers are hopeful that they will discover a true mine on the proclaimed area, and are working to that end. Diamonds continue to be found in the hard lime conglomerate containing the usual pebbles. The class of stone is very good, though generally small. The best diamond found during the year weighed slightly under 8 carats and has been valued at £19 per carat." The registered finds for the year amount to 2,897½ carats, valued at £10,900 8s. 3d. It is gratifying to be able to report again that no serious accident has ever taken place at Mahura Muthla, notwithstanding the fact that many thousands of pounds of dynamite had been used in shafts, levels, and open workings.

The diggers on proclaimed alluvial diggings in Cape Colony during the year 1911 (1,123 in number) found diamonds to the value of £346,582 2s. 6d., or an average of £308 12s. 5d. per digger.

## Correspondence and Discussion.

**Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.**

## A Conundrum.

To the Editor, *South African Mining Journal*.

Sir.—Perhaps some of your readers would solve somewhat of a conundrum which has recently cropped up. A prospector friend has lately received the following certificate of analysis from the Director of Geological Survey, Pretoria:—

"Sir.—The samples forwarded by you to the Government Mining Engineer having been passed on to this office to be dealt with, I beg to inform you that the Curator of the Geological Survey reports as follows:

Curator of the Geological Survey reports as follows: "Samples contain mechanical mixture of metallic iron and gold. The gold being attached to the iron may account for the difficulty in separating. They contained no rare minerals." (Signed), etc., etc.

To explain. The sender, in panning some of the ore on his claims, noticed a very heavy residue in the pan, from which he had great difficulty in separating the gold. Thinking that there might be some of the rarer minerals in the heavy sands, he crushed down a certain quantity of the rock, panned it, and saved the concentrates, which, to the ordinary observer, appeared to be nothing more than pyrites, gold and black sand. These concentrates he forwarded to the Mines Department with a request that they might be analysed, naturally expecting to be informed of the exact percentages of the different minerals, for which he was perfectly satisfied to pay the necessary fees. After the lapse of three or four weeks he receives the certificate of analysis quoted above. He now puts the following queries to the writer:—(1) Has the ordinary mineralisation of the earth's rocks been a mechanical process? (2) Is iron pyrites metallic iron? (3) How is he to form an opinion as to the value of his reef from the above analyses? Not being well up in the matter, the writer begs to pass the queries on to you.—Yours, etc.,

## PROSPECTUS

## The Tariff Question.

To the Editor, *South African Mining Journal*.

Sir.—We are sending you under separate cover a copy of the *Grain growers' Guide* of August 7th. You may remember that we sent you a copy some months back dealing with the tariff question. We have another article in this issue which we are sending you giving some further information on the tariff for the benefit of South African farmers. This article is prompted by the announcement that the manufacturers' secretary was coming to Canada. As we mentioned in our previous letter, the *Grain growers' Guide* is owned by the organised farmers of Western Canada, and represents their views more accurately than any other paper published in Canada, as it is their official organ. It has a circulation of 21,000 copies per week, which is the second largest in Canada among farm journals. We are anxious to see the best possible understanding between the people of the different parts of the Empire, and this is our excuse for sending you a copy of our paper. If you should make any reference to it in your own journal, would you be kind enough to send us a marked copy, as we are very interested in watching opinions in South Africa." I am, etc.

G. E. CHIPMAN  
Editor, *Grain Growers' Guide*

Winnipeg, Canada,  
August 7, 1912

The Future of South African Banket.

To the Editor, *South African Mining Journal*.

Sir. As Mr. Draper has cried "peccavi," my reply to his contribution in your issue of the 31st ultimo will be brief. Absence from camp prevented me from replying earlier. I have to thank Mr. Draper for the information he gives to geologists discoverers. But do not gather from it that the several geological concentrations which he describes as first hand of the different properties he credits them with, and as a library or a history of the geology of South Africa does not form part of my stock-in-trade as a "commercial prospector," I have no means of corroborating his statements. Such a thing is not unknown as geologists or, in fact, many others, upon examining a piece of rock or other prospect brought in to them for the purpose, recognising the presence of some valuable mineral or group, ascertaining the locality from which the sample originated, and then successfully following up the clue claim to be the original discoverer or discoverers should the mine turn out satisfactorily. If it should be a failure, little more is heard of it. We have had many such in South Africa and elsewhere, so that, on the whole, I do not consider Mr. Draper's reply satisfactory. I have no wish to detract in the least from the great assistance geologists in general have been to the mining industry through the inhabited world. They deserve every credit for their dogged perseverance in their laborious researches, but they are by no means miners, and I have yet to be convinced that they have made their mark in the world as first hand prospectors. They are generally prone to act upon "information received." They are, on a human, like unto all the rest of mankind.

This controversy arose from Mr. Draper's sweeping assertion, in your issue of 16th May, that a payable blanket series outside of the Main Road series or the Trat svad is beyond the region of possibility. Unfortunately, his statement was not taken seriously enough by your readers to provoke much controversy. If it was made as a bait to find out what is going on in the out-of-districts, it has failed significantly. Taking up the endings on behalf of the Nkandla district of Zululand, where we should find its condemnation, I have endeavoured to show, and am prepared to prove, that a payable blanket series does exist in the Nkandla district, despite the card meati in one's friends, the Rand-financed groups, many years ago, who were in such a fearful hurry to get out of the country that they left holes half-drilled in the trees of rock-uptown which their employees were to work. And the same attitude may be preserved to the present day to stave off the thought of exploitation the country had at the hands of Rand-financiers. This series may be the Main Road series, the Lyttelton series or the Devil's Own series, but that it exists for no good is now proved beyond reasonable doubt. So far, Draper as an authority on the matter, has not been successful in his venture.

S.M. Mining Journal or May 18, 1891, Vol. 11, No. 10.  
Mr. D. M. Dickey, President, 200 Park Street, Boston.

When a gentleman deliberately invites criticism, as he has done, he must expect some hard hitting; however, if I have touched him too severely on his sore part, I'm sorry, and, as this will probably be my last contribution on the subject, promise not to do it again until opportunity offers. If I remember correctly, Mr. Draper is not an older man than I am, so that if he, as he has stated, wielded pick and shovel before I was born, it must have been in some former existence, and makes one almost believe in reincarnation. One piece of information I may make to him without any boasting, and that is, when he has harrowed as much as I have ploughed in the way of prospecting and mining, it will be quite time for him to lay down his tools and say, "I have finished." I am sorry to learn he is not yet an F.G.S. My styling him as such is your fault, Mr. Editor; you added the magic letters after his name when publishing his first contribution on this subject. While there's life there's hope.

Without satisfying Mr. Draper's curiosity as to my identity, he can put it down to my bashfulness; modesty; biding my light under a bushel; anything he likes. I once more beg to subscribe myself, yours, etc.,

"EGO."

September 10, 1912.

#### Geological Truth Tablets.

To the Editor, *South African Mining Journal*.

Sir.—Table Mountain sandstones, perched on the top of a kopje, pertain to the Lydenburg age, and it is not Black Reef series as some say. The Lydenburg age extends to Timbuctoo, in all probability, as the Gold Coast bankets, or conglomerates—which they really are—belong to that system. There is a perfect syncline of our Witwatersrand age round the Vrededorf granite boss, where an inner and outer Main Reef series is traceable where not "squonk," or covered with a diabase blanket. Because Main Reef series is not blessed with as many pebbles in that district as here, geologists fail

to recognise it, and call it by all sorts of derogatory names. To your humble servant Main Reef series is Main Reef series all the country over, pebbles or no pebbles—that is where colour-geology comes in! In my humble opinion, pebbles have nothing to do with the deposition of gold in this or other ages. There are several instances in these fields of very rich gold in sandstone without a pebble to swear by. Any shaft sunk in the dolomites, due east or west of Johannesburg, is certain to strike two things, water and Black Reef series. There are very few geologists who know Main Reef when they see it outside of the Rand, but if a fairly good reef is struck in a borehole anywhere, at 3,000 feet, for instance, they proclaim it Main Reef off-hand, shale footwall, or not. Mr. Sydney Goldman, in his book of the Rand—1890 something—made the Witpoortje-break, and christened Black Reef series "Main Reef series" all the way from Grey's mynpath to the bottom end of Randfontein. Dr. Carrick and Mr. David Draper followed suit. The Geological Society, instead of trumping the trick, passed it, and later-day geologists accept the mistake (?) without question. The supposed Witpoortje-break put the public off the scent of the true trend of Main Reef series proper, but old-timers, and keen observers, trace it on to Prinsloo's Rietvlei, and so on, by stepping stones, to Klerksdorp, and for miles beyond if required. The brand of Main Reef which the late Dr. Carrick's map of the West Rand lead down to, on Venterspost, was tin-top Black Reef, at a depth of some 2,000 feet, I think, and is richer than any Main Reef on the Central Rand. Deep-deep levels sounded the death knell of outcrop mining propositions, otherwise by this time we would have had a row of smoke stacks from here to Klerksdorp, a distance of ninety odd miles. Outcrop mining should be encouraged by the Government for phthisis-struck miners, rather than proposing to change them all in one act, into small farmers. Of late, Government has gone into partnership with capital to encourage deeper-deeps, and away with the small fry and their outcrops. If all farms in the Union with mineral outcrops on them were thrown open to the public, and the prospector encouraged and assisted, as your valuable journal has ever urged, discontent and poverty amongst the middle crowd would vanish, and we would all be happy and prosperous as of yore. I believe the Boers to be the keenest prospectors in the world, but he who openly throws down the hoe for the prospecting pick, no donkeys and mealies for him!—I am, etc.,

SCOTT ALEXANDER,

"Rand Stratigraphist."

Johannesburg, September 17th.

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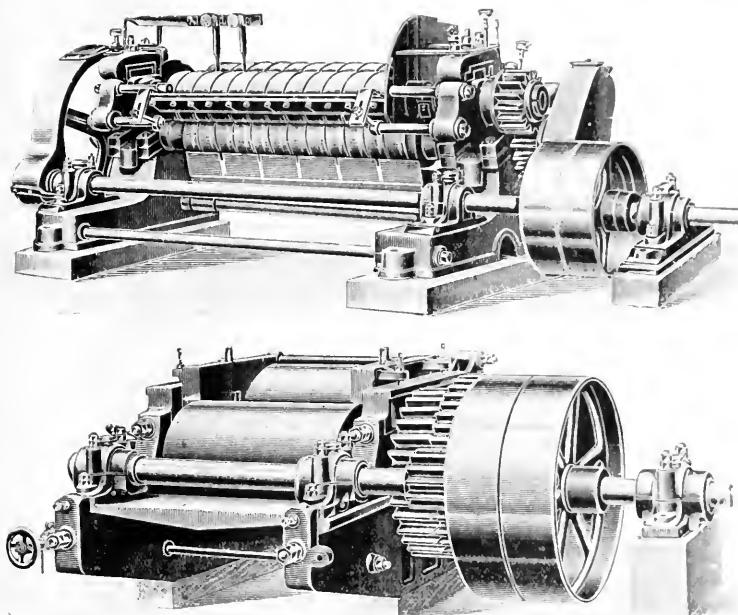
Phone 560. Box 3929.

## Engineering Notes and News.

### MODERN EARTH-WORKING MACHINERY.

In the following the attention of readers is called to machines which in general have, until the present day, not yet obtained due appreciation, and this for the simple reason that they are built by one factory only and generally were employed in old civilized countries. These machines are protected by a number of patents for the Saxonian Factory for the Building of Turbines and Machines, Ltd., since, of A. Kuhmert & Co., Meissen, i Saxony, Germany. We refer particularly to machines for tile-factories of the most up-to-date construction; and as there are still many difficulties found in the working of clay all over the world, attention

stones and lime, and until now no means were found to work this faulty soil for wall stones, building stones, etc. The above firm builds, etc. For the sorting of stones, rollers for dressing and sorting of stones, in all available sizes, see illustration. To render the lime harmless, so that it does not burst the product, patent "ideal" fine rollers in all sizes (see illustration). The clay just as it comes from the quarry is put into the roller for the sorting of stones, and the sorting is done there in the roller alternately, whilst the clay is perfectly dressed. All thick and hard stones down to the size of a hazelnut are taken out of the clay.



is drawn to these machines, which adapt every occurrence of clay to the making of wall stones, hollow stones, ceiling stones, pipes, roof stones, etc. In civilized countries, dwellings have long been erected from wall stones, facings, cement stones, sand-limestones, etc., but in other countries great difficulties are met within the making of those products. Therefore houses in the latter are up to the present day built from wood, rough stones, sand, etc., but as civilization advances the time will not be far distant when these dwellings will be improved. The usual machines for tile-factories, such as smoothing-rollers, tile presses, etc., are well known. All over the world, earth is found containing

As the clay requires another working to be ready for being formed into the finest products, the "ideal" fine rollers are used; they work with narrowly placed rollers and powder the clay extremely fine. The patent of the firm depends upon the horizontal movement of the rollers, by which the powdering is done, and in such a way that the lime ever is made harmless. Until today such machines were not to be had. The machines are protected by numbers of patents and will as soon as they are better known be widely adopted. In Germany hundreds of these machines are working. Catalogues in German, French and English are available for those interested.

#### Tube Mill Patents Consolidated, Ltd.

As will be seen from the advertisement appearing in another portion of this issue, the Tube Mill Patents Consolidated, Ltd., are declaring an interim dividend for the half-year, at the rate of 20 per cent. per annum. We feel sure this announcement will be welcomed by all who have the interests of local industries at heart. The company is doing a steady and ever-increasing business, which speaks well for the class of liners supplied by them. It is interesting to note that steel pegs play an important part in the manufacture of these liners, and in this connection, now that

the Benoni Steel Works are in full swing, it is possible for the company's patent liners to be installed at the mines at a price which enables them to successfully compete with any other type, known at the Rand. It should be further noted that this company is prepared to supply, not only liner rods under their patent rights, but also complete sections

New Tube Mill has been declared—first interim dividend of 10 per cent.

## ENGINES, BOILERS, AND MACHINERY IN THE UNION.

### Interesting Review of the Position.

THE following are particulars concerning the power and value of boilers, engines and machinery in the Union of South Africa taken from the official returns of the Government Mining Engineer, issued this week:—In reference to the Cape Province, it should be noted that the Department has only just commenced collecting this class of return, and has hitherto had no direct means of getting into touch with machinery owners. The statements presented cannot therefore be considered complete. The following is an extract of the more important details:—

#### BOILERS.

	Number Erected.	Fire Grate Area.
Transvaal	4,242	114,862 sq. ft.
Cape	1,048	16,759 sq. ft.
Orange Free State	523	7,472 sq. ft.
Natal	891	13,739 sq. ft.
Union of South Africa	6,704	152,832 sq. ft.

#### PRIME MOTIVE MACHINERY.

	No.	I.H.P.
Transvaal (excluding 3,157 motors of 179,947 horse power using purchased power)	3,491	590,590
Cape (excluding 563 motors of 4,751 horse power using purchased power)	1,919	71,379
Orange Free State (excluding 83 motors of 495 horse power using purchased power)	681	28,335
Natal (excluding 184 motors of 1,818 horse power using purchased power)	1,187	49,630
Union of South Africa (excluding 3,937 motors of 187,014 horse power using purchased power)	6,978	742

With respect to new machinery, plant, and spares, introduced during the year, which in value amounted to £2,240,728, the chief items are as follows:—

#### TRANSVAAL.

	Gold Mines.	Diamond Mines.	Coal Mines.	Base Mineral Mines.
Boiler plant	£72,901	£400	£10,000	£2,422
Steam engines for winding	81,558	—	1,619	1,924
Steam engines for compressors	74,779	—	7,016	1,039
Pumps	62,723	291	1,542	3,347
Belt conveyors and elevators	31,425	1,460	1,870	1,422
Reduction plant	217,899	1,358	—	6,123
Treatment plant	153,687	—	347	2,167
Electric generators, engines, etc.	163,982	1,985	1,609	3,773
Power lines, transformers, etc.	171,343	1,566	515	1,038

#### PIPE MILLS.

These plants fall in the Transvaal have continued to increase, both in number and power capacity:

Tube Mills (Gold Mines).	No.	Total Horse Power.	Average Horse Power.
Erected at 30th June, 1906	55	2,766	50.3
Erected at 30th June, 1907	69	1,720	68.1
Erected at 30th June, 1908	97	7,532	77.6
Erected at 30th June, 1909	150	12,527	88.8
Erected at 30th June, 1910	203	17,852	87.9
Erected at 31st December, 1911	285	27,511	96.5

In addition there were erected five tube mills on diamond mines, and four on base mineral mines in the Transvaal.

#### MECHANICAL COAL CUTTERS.

The following table shows the number of coal cutters in use and the class of power employed:—

Province.	Number of Machines.		
	Electricity.	Compressed Air.	Total.
Transvaal	—	223	223
Cape	6	—	6
Orange Free State	—	2	2
Natal	27	148	175

#### UNION OF SOUTH AFRICA.

The number of boilers in which it was considered necessary to reduce the working pressure was twenty-five in the Transvaal and ten in Natal. In these cases, as formerly, the reason for this reduction of pressure was generally the wasting of the plates due to internal corrosion, or bulges due to over-heating. The defects met with in boilers during the past twelve months' inspections presented no element of novelty, and do not call for any special remarks. Corrosion and pitting have been minimized to a great extent, owing to the greater attention paid to the quality of the feed water supply. On the mines, chemical treatment is the general practice, and daily samples are analysed so that the engineer shall be made acquainted with the correct amounts of soda and lime to be added. The total number of boilers registered in the Transvaal, viz., 4,242, shows an advance of 52 over the number recorded at 31st December, 1910. In Natal the total number of boilers registered, viz., 1,216, shows an advance of 58 boilers over the number recorded at 31st December, 1910. The number of steam boilers in the Orange Free State appears from the annual returns to be 523, and in the Cape Province 1,048. Proper registration has not, however, yet been effected, and no information is, therefore, at present available regarding the numbers of the various classes of boiler in use.

#### NATAL PROVINCE.

(Compiled from the Registers of the Inspectors of Machinery.)

Type.	On Mines	Indus- trial Concerns.	Total.	Date of Oldest Boiler.	Highest Steam Lb. per sq. in
Cylindrical multi-tubular, externally fired	14	118	132	1889	60
Cylindrical multi-tubular, internally fired	4	3	4	1904	80
Lancashire, Cornish, and Galloway	28	51	79	1891	60
Lancashire, Cornish, and Galloway, combined with multi-tubular	3	3	6	1898	140
Locomotives	79	495	574	1877	80
Vertical	23	225	248	1884	60
Water-tube straight	32	12	74	1895	80
Water-tube curved	6	15	21	1904	125
Marine	2	71	76	1893	80
Miscellaneous	—	2	2	1896	80
Totals	188	1,028	1,216	—	—

In comparing this total with that given in tables Nos. 30 and 35, compiled from annual returns received direct from mines and works, it will be noted that the table differs by upwards of 300 boilers. The inspection work in Natal has not yet been sufficiently complete to show exactly the number of serviceable boilers existing, but it is very probable that the difference between the tables is accounted for



so as regards Durban. It would almost appear as if there were a deliberate conspiracy to keep the facilities of Durban in the background, and to belittle the Natal port in every possible way, so as to divert trade to the other Union ports. The advertisement now appearing in the *African World*, for instance, is proof either of gross negligence on the part of the High Commissioner's office, or whoever framed the advertisement, or of a fixed determination to minimise the advantages of Durban as a port, and exaggerate the advantages of the other Union ports. The advertisement reads:

The Equipment of the Ports includes the following:-

	Cape Town.	Port Elizabeth.	East London.	Durban.
Tugs .....	3	5	2	3
Cranes Hydraulic	-	31 from 1 to 7 tons	1 from 3 to 5 tons	36 from 1½ to 50 tons
Cranes, Electric	30 from 3 to 7 tons, 1 to 20 tons.	7 from 3 to 20 tons	-	-
Gantry, Electric	-	-	1 30 ton	-
Cranes, Steam	-	-	1 50 ton	-
Berthage ...	2½ miles.	Open roadstead.	1½ miles.	4½ miles.
Capacity of Port	10,000 tons.	7,000 tons.	5,000 tons.	8,000 tons.
Depth at High Water at Jetty	36 feet.	21 feet.	33 feet.	35 feet.

#### Floating Dock and Floating Workshops at Durban.

We cannot say (says the *Natal Mercury*) how far the statements as to equipment of the other ports is correct, but it must be apparent

to anyone who knows Durban that the above figures are either out of date or quite incorrect. All the 1½ ton hydraulic cranes were scrapped some time ago, and 3-ton cranes substituted. It is stated that there are no electric cranes. There are ten. The capacity of the port is given as 8,000 tons, as against 10,000 tons for Capetown, but the Durban figure must exclude coal, while the figure given for Capetown evidently includes it. On the face of it, Durban, with two miles more berthing space than Capetown, must have a greater capacity, and clearly Durban handles more tonnage per month, including bunker and export coal, than all the other Union ports put together. For instance, the tonnage handled at Durban during July was 225,156 tons, as against 199,438 tons for the whole of the other Union ports, and July was a rather slack month at Durban. Last month the tonnage handled was 289,575 tons, or over 12,000 tons per working day. The greatest available depth at high water at the wharf at Durban is given at 35ft., whereas it is 38ft. 6in. There is more berthing and deeper berthing at Durban than at Capetown, but in the advertisement the best depth at Durban is given as a foot less than at Capetown, although it is 2ft. 6in. more. Then there is no mention made of the fact that there are modern coaling appliances at Durban. Last month 62 vessels used those appliances, and took on board 115,048 tons of coal by their means. This however, appears to be all in a piece with the disposition of the Government to hamper the Natal coaling industry. If the trade increased to any extent the railways would be unable to carry it, and the demand for a new mineral line would become so insistent that it would have to be built, and this appears to be what the Government are resolved not to do if they can help it. There is no excuse whatever for the obsolete state of the figures contained in the advertisement as regards Durban. The correct figures are given in brochures and circulars issued by private firms, but, of course, the Government can get the figures from official sources, and it is simply unpardonable that week after week they should continue to advertise the equipment of the port as being considerably below what it really is.

#### Tube Mill Patents Consolidated, Ltd.

We are informed that the directors of the General Mining and Finance Corporation, Ltd., have recently purchased from the Tube Mill Patents Consolidated, Ltd., the right to manufacture tube mill liners in accordance with the patents held by the latter company.

#### ANSWERS TO CORRESPONDENTS.

- D. Macdonald (Pretoria).—The company is in liquidation, and there is nothing for the shareholders.  
 J. Seabrooke (Krugersdorp).—The history of the mine is shown in the article on defunct mines in another part of this issue.  
 J. N. R. D. (Methone).—(1) We cannot trace the articles in question; (2) better write direct to one of the mining houses here.  
 " Kroonstad."—(a) The diamond market is certainly likely to improve, therefore you should hold a little longer; (b) certainly average.

#### West Rand Unified.

Mr. Thomas Dilks has been appointed to the management of the West Rand Unified.

#### NEW ELAND DIAMONDS, LIMITED.

(Incorporated in the O.F.S.)

#### NOTICE TO SHAREHOLDERS

#### ¶ INTERIM DIVIDEND.

NOTICE is hereby given that an Interim Dividend (being the first) of 10 per cent., equal to two shillings per share, has this day been declared by the above Company to Shareholders registered in the Books of the Company on the 30th September, 1912.

The Transfer Books of the Company will be closed from the 1st to the 5th October, 1912, both dates inclusive.

Dividend Warrants will be posted to Shareholders as soon as possible after the 5th October, 1912.

By Order of the Board,

C. S. WIMBLE,  
Secretary.

138, Cullinan Buildings

Johannesburg, 19th September, 1912.

#### Copper! Copper! Copper!

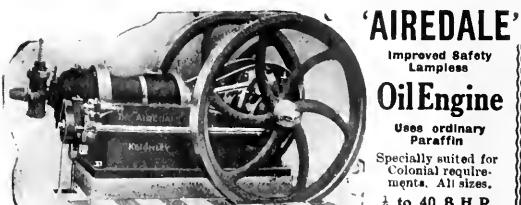
#### IMPORTANT NOTICE to Financial & Mining Houses. For Sale:

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## Automobile Notes.

### Street Accidents.

The tragic nature of many accidents, which occur at street intersections, some more or less unavoidable, arouse the Johannesburg community to a consideration of the necessity which exists for some provision whereby the danger to the public, at present so pronounced, may be eliminated. The unfortunate occurrence early this week, involving the death of a prominent Johannesburg motor cyclist, is still another unhappy reminder of the need for reform in regard to traffic conditions. The difficulty of the problem of how best to control traffic in a city, such as Johannesburg, with streets planned at right angles, has for long engrossed the attention of the responsible bodies for such control, in widely different parts of the world, and various measures have been adopted, with attendant success. One of the most commendable devices in operation in several cities is the placing of mirrors in such a position at street intersections as to enable the users of the main thoroughfares to ascertain the movements of the traffic in the cross streets, right and left, and *vive-versa*. The scheme, if widely adopted, would naturally entail considerable expense, but, judged from the standpoint of the public safety, the experiment would be amply justified. The value of a system of mirrors can be gathered from an observation of the traffic in town proper, where the volume in its entirety is reflected in the windows at the respective four points where the streets cross, and it is well known that careful drivers of motor cars and other vehicles make a special study of the facilities thus afforded, a feature which, it may be remarked, contributes in no small measure towards the minimising of accidents in Johannesburg. The actual danger points, however, are outside the central portion, as it is recognised, i.e., where the pointsmen operate, and where the majority of those in charge of vehicles are always *qui vive*, and this is borne out by the fact that the more serious accidents occur in the suburbs, where pointsmen obviously are an impossible consideration. The erection of mirrors on important street intersections may perhaps appear at first sight ludicrous, but from the success of the provision in other parts one must conclude that a similar scheme would effect excellent results in Johannesburg. On the other hand, the fact cannot be concealed that the adoption of the most approved methods, in point or traffic control, must prove abortive, until such time as drastic measures are introduced by the authorities to deal in particular with the maniacal speed indulged in by motor cyclists, who, it would appear, are at present the most dreaded of all street users. In the suppression of these individuals much of the desired redress will be found to centre.

### Road Maintenance.

The great increase in road expenditure in this connection is directly attributable to the growth of motor traffic, and in order to arrest this increase better methods of maintenance are advised. The heavy motor tractor is largely responsible for the excessive wear and tear of road surfaces to-day, and in view of the fact that its uses are becoming widely recognised, some special road treatment calculated to withstand the weight of these vehicles must be adopted. True, their operation could be restricted in a great measure, on main thoroughfares, but nevertheless the entire road system must be maintained at a standard of strength and efficiency consistent with all vehicular traffic. The effect of the heavy vehicle in loosening the surface crustation is very serious with the approach of the rainy season, as the impeded surface being readily washed away the disintegration of the roadway follows as a natural course. Without appearing to criticise the methods of road maintenance as carried out by the Johannesburg Municipality, attention may be drawn to the system of watering, as effected by the horse-drawn appliances, with which the irregularity of the water distribution on the road surface is very marked, parts, in consequence, of the streets receiving an apology for sprinkling, so to speak, while others in turn are flooded, hence the numer-

ous patches of mud on otherwise dry roads. Bituminous binding for roadsides immediately solves the problem, which the introduction of the motor vehicle into the roads has rendered necessary, and provides a surface which will allow for the smooth running of motor vehicles, in addition to the saving of fuel, the reduction of dust, and the saving of labour. The method of application is not yet adopted.

### Parsons' Non-skid Chains.

Some little time ago we described the invention of these chains, having a special reference to their influence, to a great extent, the popularity of motor cars in South Africa. It is therefore appropriate to make a few remarks made to this famous road-side device. The Parsons' is a reliable, convenient and inexpensive device for use. With a pardonable pride the manufacturer refers to the fact that these chains have been in service in South Africa under all conceivable conditions of road surfaces, and, in own with an unrivalled and ever-increasing popularity, is attributable to the utmost simplicity of the attachment, combined with the remarkable results obtainable. The well-known Parsons' consists of wire side loops and zig-zag cross chains, and is the earliest attempts to preserve motor cars from the danger of side slip. It was introduced at a time when there were few other devices in existence, and was, notwithstanding other devices claiming to be non-skid, the first, in addition to preventing sudden stops. Since the time of introduction these chains have enjoyed a steadily growing favour among motorists, who, since the sale of sixty thousand the Home trade alone has its chief product. The principal feature of the improvement is the substitution of chain for wire in the side loops. At the time of experiment it is aerated that the chain would be relied upon for strength and best results. In view of this respect, Chain loops have made the device easier to put on, and also overcomes the difficulties of fitting, it being easy to shorten them. It should be remarked, the device being little too large, and, in this case, should the device be a little too large, it is recommended to use a smaller size. The device, in the ease of re-treated or extra strong types, affords a good precaution. The Parsons' can be fitted in a small space when travelling. The simple instructions are contained in the metal fittings, and the device, patented, and when compared with other similar manufacturers, will, for the same price, give a speciality chain for use in South Africa, and, due to its similar popularity to that which it enjoys in America, due to many of the merits, and especially its value in the prevention of side-slip, it is estimated.

**FASTNUT**  
WASHERS.

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affords, become suitably recognised. The indifferent nature of the roadways of the country certainly renders the use of such a device little short of indispensable. Space at our disposal will not permit detailed description of other specialties marketed by the Parsons' Non-skid Co., Ltd. Their Rapid Repair Kit is already "a household word" in the motor world, in that it has provided the newest and by far the most effective means of making an instantaneous repair in the punctured tube of a motor tyre, with a minimum of delay.

### "Here and There."

Mulder's Drift Hill has been definitely decided upon as the venue for the annual hill climbing competition of the Transvaal Automobile Club, on the 29th inst. The hill, considered one of the steepest in the Transvaal, has been the scene of many keen contests in the past, and is well known to the majority of motorists. The event is one in which great interest centres, and a large entry is expected.

\* \* \* \*

The local agents for the Napier car, H. Gill & Co., have received information of some interesting experiments conducted by the enterprising head of the firm manufacturing that machine, in the interests of self-starters, with a view to their possible adoption in regard to the "Napier." Mr. Edge has been carrying out exhaustive personal trials with five principal types which cover what may be considered the practical field in self-starters to-day, and this expert considers that none of them would give satisfaction after a year's use, and all of them would require a considerable amount of care and intelligence in operation. In short, Mr. Edge is of opinion that their disadvantages outweigh the advantages at the present time, but recognises that the day is not far distant when engines will be automatically started from the seat of the car.

\* \* \* \*

The self-starters on the whole as they exist to-day are complicated to such an extent as to necessitate the attention of specially trained men to keep them in order. The disadvantages also embrace excessive weight and expense, and, as Mr. Edge points out, in commenting upon the compressed-air type, the workmanship has to be absolutely perfect, and even then the installation is most difficult to keep in order.

\* \* \* \*

Still another success has been achieved on Wakefield "Castrol," the 1139 h.p. Calthorpe, which made the world's records at Brooklands for the flying half mile, flying kilo, and flying mile, on the 6th ult., having used this famous lubricant.

\* \* \* \*

A large number of Johannesburg cars have been lying idle while the owners were absent overseas or at the coast, and having in mind the Rand-Coast road offering special

attraction for touring, one would imagine that numbers of motorists would undertake the trip. The idea of an extended run, however, of this nature does not evidently appear to every wheelman. On the other hand, the railway rates for conveyance of motors are somewhat excessive, and, in addition, transit is not always of a satisfactory nature. Were the railways to offer inducement, particularly in regard to the reduction in the charges for the conveyance of motor cars, it would eventually prove beneficial to the Administration, as many motorists, even those who now attempt the journey to the coast by road, would prefer the railway facilities.

\* \* \* \*

The situation in the American motoring industry is regarded as critical on account of over-production, and an outlet for the superfluous manufacture is one of absorbing interest to the promoters of the industry in the United States. The invasion of the British market, which is treated in some quarters with a certain indifference, is by no means the bogey some are pleased to designate it. The effort is, rather, a very determined one on which the American manufacturers have embarked, and the capturing of a large portion of the British market, from all accounts, seems well in sight.

\* \* \* \*

The manufacturers of the White car are gratified at the result of the trials conducted by the Russian Government, in the effort to find a car best adapted to the use of its army, and the subsequent action of that Government, in favouring this type of car—the White—from the flower of European motor vehicles, is considered as a signal honour conferred upon the White Co. The choice, it is expected, will mean the placing of an order aggregating 2,000 vehicles.

### Tube Mill Patents Consolidated, Limited.

NOTICE is hereby given that an Interim Dividend at the rate of Twenty per cent. per annum, for the half-year ending 31st August, 1912, has been declared, payable to Shareholders on October 1st, 1912, at the Company's offices.

By Order of the Board,

E. A. JAMES,  
Secretary.

Dowell Buildings, Loveday Street,

Johannesburg, 18th August, 1912.

Phone 1801

Box 2415, Johannesburg.

**J. R. LAWRENCE,**  
No. 8, LONDON HOUSE, LOVEDAY STREET.

Sole Agent for SOUTHWARK MANUF. CO., Ltd., London  
Makers of the "Vi-Balata" Belt, the "Amber Tan," the "D.A.P.,"  
the "Orient Belt," Raw Hide Belting, Conveyor Belting, Link Leather  
Belting, English Oak Tan Belting, N.M.T. Belt Laces, Raw Hide  
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South Africa (by post)	...	...	£1 10 0	per annum.
Local Delivery (town only)	...	...	£1 6 0	per annum.

Half-yearly and Quarterly pro rata.

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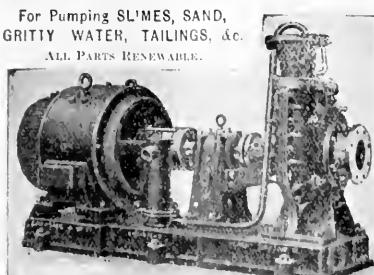
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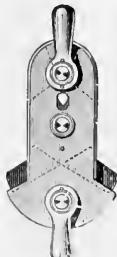
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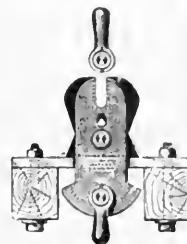
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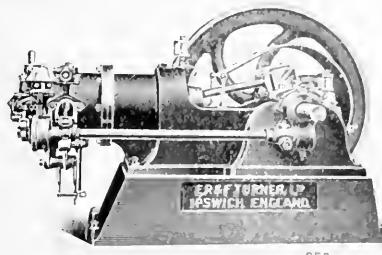
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### NOTICE TO SHAREHOLDERS.

NOTICE is hereby given that the FIFTEENTH ORDINARY GENERAL MEETING OF SHAREHOLDERS, for the year ended 30th June, 1912, will be held in the Board Room, the Corner House, Johannesburg, on WEDNESDAY, 6th November, 1912, at 11 a.m. for the following business—

1. To receive and consider the Balance Sheet and Accounts for the year ended 30th June, 1912, and the Reports of the Directors and Auditors.
2. To elect two Directors in the place of Mr. C. S. Goldman, M.P., and Mr. R. W. Schumacher, who retire in accordance with the provisions of the Articles of Association, but are eligible and offer themselves for re-election.
3. To appoint Auditors in the place of Messrs. Deloitte, Plender, Griffiths, Annan & Co., and Mr. L. F. Melville, who are eligible for re-appointment, and to fix their remuneration for the past audit.
4. To transact General Business.

The Share Transfer Books of the Company will be closed from the 6th November, 1912, to the 12th November, 1912, both days inclusive.

Holders of Share Warrants to Bearer who desire to be present or represented at the Meeting must deposit their Share Warrants (or may at their option produce same), at the places and within the times following—

- (a) At the Head Office of the Company in Johannesburg, at least twenty-four hours before the time appointed for the holding of the Meeting;
- (b) At the London Office of the Company, No. 1, London Wall Buildings, London, E.C., at least thirty days before the date appointed for the holding of the Meeting;
- (c) At the Office of the Compagnie Francaise de Banque et de Mines, 20, Rue Taitbout, Paris, at least thirty days before the date appointed for the holding of the Meeting;

and must otherwise comply with the "Conditions as to the issue of Share Warrants or Bearer Shares" now in force.

Upon such deposit or production a certificate, with proxy form, will be issued under which such Bearer Warrant holder may attend the Meeting either in person or by proxy.

By Order of the Board,

RAND MINES, LTD. (Secretaries),  
S. C. STEHL, Joint Secretary.

Head Office: The Corner House,  
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14th September, 1912.

13179

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### Declaration of Dividend No. 19.

NOTICE is hereby given that an Interim Dividend of Twenty-two and a half per cent, (four shillings and sixpence (4s. 6d.) per share) has been declared by the Board for the half-year ending 30th September, 1912.

This Dividend will be payable to all Shareholders registered in the Books of the Company at the close of business on 30th September, 1912, and to holders of Coupon No. 19 attached to Share Warrant's to Bearer.

The Transfer Books of the Company will be closed from the 1st to the 7th October, 1912, both days inclusive.

The Dividend will be payable to South African Registered Shareholders from the Head Office, Johannesburg, and to European Shareholders from the London Office, 1, London Wall Buildings, London Wall, E.C., on or about the 4th NOVEMBER, 1912.

Holders of Share Warrants to Bearer are informed that they will receive payment of the Dividend on presentation of Coupon No. 19 at the London Office of the Company, or at the Compagnie Francaise de Banque et de Mines, 20, Rue Taitbout, Paris.

Coupons must be left four clear days for examination, and will be payable at any time on or after the 11th November, 1912.

By Order of the Board,

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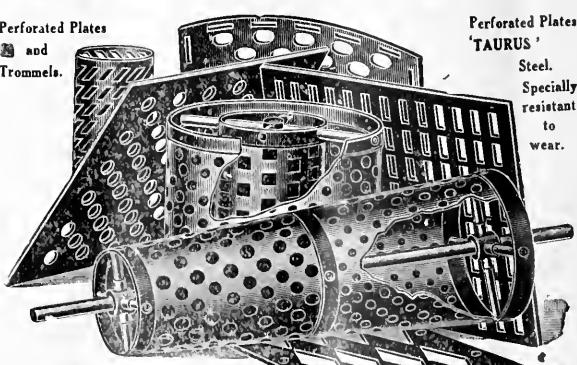
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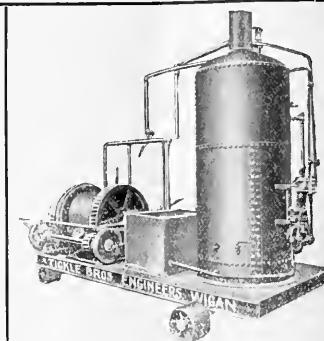
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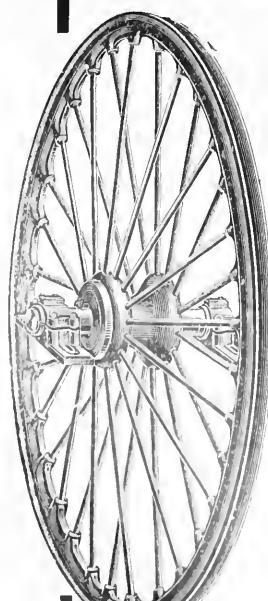
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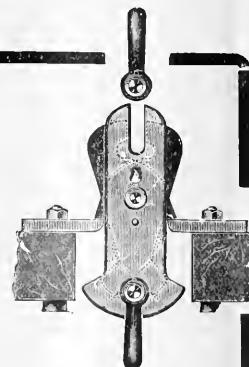


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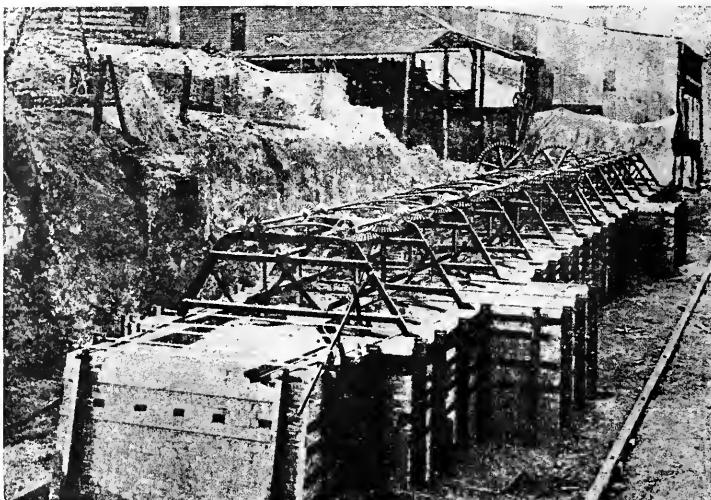
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